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CONTENTS.

	PAGE		PAGE
TELEGRAPH AND TELEPHONE MEN AND WOMEN	143	INTERNAL CIRCULATION OF THE CENTRAL TELEGRAPH OFFICE.	
TALKING WITH AMERICA	144	PHONOGRAMS. BY MARY A. TYNAN	154
THE TELEPHONE SERVICE. BY A. E. COOMBS	144	AUTOMATIC TELEPHONES IN EAST ANGLIA	157
NOTES ON TELEGRAPH PRACTICE. BY G. T. ARCHIBALD	146	TRANSFER OF MR. CHAS. WHILLIS	158
TELEGRAPHIC MEMORABILIA	147	OUR NEIGHBOUR—ST. BARTHOLOMEW'S	159
TRANSATLANTIC TELEPHONY. BY MAJOR A. G. LEE, M.C., B.Sc., M.I.E.E.	150	RETIREMENT OF MR. T. E. P. STRETCHER	159
THE C.T.O. GOLFERS AND BOWLERS	151	THE TELEPHONISTS' COLUMN—"TALK OF MANY THINGS"	160
PROGRESS OF THE TELEPHONE SYSTEM	151	DEVELOPMENT STUDIES. BY W. E. GAUNTLETT	161
EDITORIAL:—		GOLF MATCH	162
FIFTY YEARS OF THE TELEPHONE	152	LONDON TELEPHONE SERVICE NOTES	162
HIC ET UBIQUE	153	PERSONALIA	164
REVIEW	153	OBITUARY	164

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TELEGRAPH AND TELEPHONE MEN AND WOMEN.

XXVII.—

MR. THOMAS ABRAHAM PROUT.

MR. T. A. PROUT, of the Secretary's Office, if not the *doyen* of the Post Office telephone service, is at least a close "runner-up" for that distinction. He comes of Cornish stock, and, although born abroad, spent his boyhood and received his education in the Duchy. He started his telephone career so long ago as October, 1881, with the United Telephone Company at Plymouth, but, after a few months' service, he accepted an offer to go to Bristol, where he remained several years and was chief clerk, cashier, and secretary of the Western Counties and South Wales Telephone Company from its formation in December, 1884, until its absorption by the National Telephone Company in July, 1892. In November of that year he became the first District Manager of the National Telephone Company at Bristol, and in January, 1896, promotion came to the District Managership at Leeds. In March, 1898, he became



District Manager at Manchester, and in 1902 he was appointed to the Assistant Superintendentship of the North Western Province with headquarters at Liverpool. Here he remained until the transfer of the National Telephone Company's business to the Post Office ten years later, when he was transferred to London.

Mr. Prout is a man of versatile gifts. His artistic tastes have shewn themselves in painting, photography, and music. He is intensely interested in education in all its phases, and is an ardent supporter of technical societies. In the realm of sport, he has, in his day, achieved local distinction in Rugby football—he was one of the founders and first players of that famous club, the Bristol Rugby Club—and in cricket and lawn tennis. Nowadays he confines his athletics to golf, at which he is a sound, and occasionally a brilliant, performer.

There is no more popular or engaging a personality in the telephone service than Mr. Prout, whose kindness and unselfishness have endeared him to all his colleagues.

[Photograph by E. Thomson.]

TALKING WITH AMERICA.

It was a bitterly cold Sunday afternoon in March. The roads in my little town in Surrey were deserted. What the Victorian novelist would have called the tender shades of twilight were beginning to approach. The English ritual of tea, I mean Sunday tea, was over. The book of the week laid aside for Sunday reading was open (at any rate I will say that for it). Mr. Ambassador Page had a habit of looking into the glowing ashes of the fire each evening for an hour, and on this March Sunday evening (the 21st to be accurate), I was imitating him at a respectful distance. And then I was awakened by the telephone bell.

I think that "awakened" is the perfect word. Has it ever occurred to the user of a telephone that in the interval between hearing the bell and answering the telephone thousands of thoughts flash through his mind? So it was as I walked to the telephone. I thought of the things that might possibly be happening in that busy place, the Central Telegraph Office, at this quiet time on a Sunday afternoon. But I was doubly awakened when a kindly and courteous voice said "Colonel Reber of New York wants to speak to you." I have set the scene, I think, carefully and accurately. Here I was in a quiet corner of Surrey being asked to speak to New York.

Not only Colonel Reber spoke but Mrs. Reber also, and with her the conversation was particularly good. Then followed Mr. Espenschied. Colonel Reber and Mr. Espenschied were with us in Paris, and it was a delight to reopen that pleasant acquaintance-ship. Then followed friends of long ago, Mr. Rhodes and his family, and lastly and culminatingly, General Carty, of whom I will say in a phrase that he is the *doyen* of the Telephone world. And then I spoke to Mr. John Carty, reminding him of the fact that many years ago I was by when his first automobile was given to him, and I asked him how that automobile was getting on, and my friend's hearty laugh across the Atlantic was the sort of thing that brought the human touch to the sequence of conversations. I have no doubt that in the background was Dr. Jewitt, to whom I spoke many, many years ago from New York to Denver City, and who has been, through all this tremendous advance, a figure on whom we look in England with peculiar respect. And now for the sentimental touch. If I were asked to write down my closest friends in the United States of America this would be my list. Imagine the feelings of speaking to them all as it were in a group within one half-hour on a dull Sunday afternoon in the middle of Surrey with the book of the week still lying open, for once more I must say this for it.

The voices were wonderfully clear. Some of them were clearer than others, but in no case did we fail to catch the meaning. In that strange psychological way in which one feels temperament and kindness and humanness behind the voice one felt it on this occasion all across the Atlantic. One felt it again in a kind of way on the Tuesday, when a semi-official message reached us that the voices, though not perfectly articulate, had been heard in Melbourne. The *Journal* exists to record events of this kind. Future generations of the Telegraph and Telephone brotherhood may like to look up the files of the *Journal* to see what happened in 1926 in connexion with this development, just as we should like to see a record precisely of what happened in 1876, with the beginning of the telephone. That must be an apology for a homely little note.

There is one further thing to say. I was a little surprised on the Monday morning to read in the *Westminster Gazette* that the listening-in correspondent of that paper told the world that he had heard Colonel Reber ask for me but that I was unable to hear. I do not feel in a controversial mood on this subject, and I content myself with saying that on this occasion the listening-in correspondent was a little below his usual form.

J. L.

THE TELEPHONE SERVICE.*

BY A. E. COOMBS, Glasgow.

General. There is said to be nothing new under the sun, and the statement is probably correct. My comments this afternoon, therefore, may not reveal anything original but they will, I hope, dress up old facts in new clothes and focus interest on some of the things that matter in the Telephone Service. In some of the following notes I am indebted to a few service and non-service writers for phraseology that is apt, and better than my own. I hope I am not trespassing in making use of this, but I take the opportunity now of acknowledging the help received. I propose dividing my talk into two sections. First and very briefly, "the broader aspect of the service in its relation to the business of the country," and second "the application of this to the Glasgow District." In the latter it will be necessary to quote statistics, but I shall endeavour to place the relative figures before you in an acceptable form and yet at the same time keep in clear view their important bearing on the efficiency of the telephone organisation. It would be true, I think, to say that at some time or other every phase of the public service comes under the searchlight of stocktaking and criticism. This is a desirable thing. Huge organisations, whether public or private, should be periodically tested from every standpoint so that it may be determined whether or not the machine is functioning in proper manner and whether it is capable of improvement. Development is the essence of life. A system adequate to-day will be inadequate to-morrow unless it can be adjusted to meet the needs which arise with the morrow. Satisfaction with existing conditions is the enemy of efficiency. There is a natural and ceaseless forward urge inherent in humankind that must be recognised. The harnessing of this silent but irresistible force to the Telephone chariot is a bounden duty; we know, and act upon the knowledge, that it is only by responding to this urge that real progress can be made towards the ultimate goal of perfection. In every public utility organisation there needs to be clear apprehension of the service to be afforded; and to then see that there is equality of treatment in its rendering and efficiency in its administration. These broad principles are ever before those responsible for the Telephone Service, and while the system as now evolved and controlled cannot ensure the smooth running of the wheels of business life, it can, and does, help in no small measure to facilitate the work of the business community. Self-effacement—at least in the eyes of the public—is one of the qualities required of the Civil servant. By the operation of this law telephone subscribers are unaware of the close, scientific, and continuous probing that is being carried out by Post Office expert staff with the object of locating trouble and improving standards so that we may attain the "cent per cent" efficiency so much to be desired. Despite statements to the contrary no stone is left unturned, no path unexplored, in the pursuit of maximum efficiency. Seconds to us are golden; minutes are jewels; hours are beyond price! The millions of telephone transactions per annum in Glasgow alone make the smallest fraction of waste time on each an expensive item in the aggregate.

Glasgow Post Office Organisation.—I would like now to sketch, in brief outline, the local organisation of the Glasgow Post Office. At the head is the Postmaster-Surveyor who has under his general control the Postal, Telegraph and Telephone Services, each of which, for administrative purposes, is a self-contained unit. At the head of the Telephone Branch is the District Manager whose department is organised in three branches, viz: Accounting, Contract and Traffic. The Engineering Department is separate and independent, its functions do not come within my purview, but I need hardly say that in actual work we are closely interwoven and co-ordinated.

Telephone Accounting Branch.—The name "Accounting Branch" explains itself. This section deals with the rendering and payment of telephone accounts; with counter enquiries; issue of directories; call office collections; and kindred matters. In this district approximately 30,000 separate accounts are rendered each quarter; as a rule these are despatched by the 20th or 21st of the first month in the new quarter. Glasgow compares favourably with other places in regard to prompt payments, but even so it is necessary to forward reminders to one out of every three of our subscribers. The charge now being made in cases where even the reminders are ignored is intended more as a deterrent against negligence than as a source of additional revenue; indeed it is doubtful if the direct cost to the Post Office and the indirect costs to yourselves will be covered by the extra 5s. concerned.

Contract Branch.—The Contract Branch deals with the expansion of the service by the securing of new subscribers and improving the facilities of those already connected. This section is particularly concerned with development work; it has not only to secure new business to-day, but it must, through its expert officers, project itself into the future. The supplying of estimated "telephone growth" figures on which plant, equipments, and buildings are provided in advance of immediate requirements, is not the least important of the duties of a Contract Officer, for it is essential that the Post Office should at all times be in a position to meet promptly the demands for service.

Development Studies.—The number of telephone stations presently in the Glasgow District is 52,853. Comparatively recently, complete studies were made of probable telephone requirements for the next 20 years, taking these

* Address to the "City Business Club," Glasgow, March 4, 1926.

in five-yearly periods. The exchange areas were divided into minute blocks, each of these being studied separately, while in the heart of the city, in the larger buildings, the study was carried out floor by floor. There is of course the question of introducing Automatic Exchanges at some future convenient date, but one has in this regard to bear in mind the comparatively modern equipment of the present Glasgow Exchanges. Short of being automatic it is up-to-date, and there is no present justification for scrapping it, if only on account of the capital loss involved.

Incidentally it may interest you to know that particularly rapid growth is expected in the number of telephones at private residences.

Street Kiosks.—Another interesting feature is the increasing popularity of our street kiosks. There can be no doubt whatever as to the usefulness of this type of public call office, and there is no doubt either as to their stimulating effect on the telephone habit. We are increasing the number as rapidly as the necessary negotiations will permit, and improving those already erected by, in many cases, the installation of artificial lighting and the fitting of special coin collecting boxes to take shillings, sixpences and pennies, so that long distance as well as local service facilities may be available. We have also made a start in respect of fitting telephones at the cab ranks so that those who wish to do so may order their taxi directly from the stance.

Traffic Branch. To the business man the functions of the foregoing branches may appeal only in an academic sense: what he is concerned about is the "service," and in that word everything is included. The attention he gets from the operator and the way in which his calls are effected make other considerations appear of minor importance. The accounting may be perfect and development satisfactory, but if calls are not handled with courtesy, efficiency and despatch, then what else matters? The Traffic Branch is concerned with this side of the story; it is the section responsible for the organisation and work of the exchanges, the provision of circuits between exchanges, the investigation of service complaints, the compilation and examination of statistics relating to service and equipment questions, and many other duties, all of which have as their main objective the promotion of an efficient and well-ordered telephone service.

Public Criticism.—It may not be amiss at this point if I diverge a little from a plain statement regarding the functions of the traffic branch to enumerate certain broad and general ideas on the telephone service from an inside point of view. Our exchange staffs are probably subject to the acid test of public criticism more than any other type of public or private employee. The operator typifies to the caller the whole of the service, and when anything goes wrong there is a tendency to hold her responsible without due regard to all the factors in the case. It would be foolish—and wrong—of me to claim immunity from defects; only too clearly are we conscious of shortcomings; for with us as with you, the human factor obtains and must be taken into account. The efficiency of the service, however, is a matter of highest concern to the business community and to the Post Office, and while the telephone operator is taught how to speak to her subscribers and to effect calls with accuracy and despatch, her critics would do well to remember, I think, that in an imperfect world, occasional lapses from ideal standards of patience, courtesy and accuracy, are by no means confined to the official end of the telephone line. I have always felt that neither members of the public nor Civil servants would deliberately occasion trouble, and that friction is usually occasioned unwittingly or by lack of proper consideration. We believe this of you; will you believe it of us? and in your service difficulties keep in mind that, behind the scenes, we are working to improve things, and that we are as disturbed as yourselves at any thing which tends to lower efficiency. So far as complaints are concerned we work on the principle that no one would make these without cause, whether or not we are responsible does not affect the case; if we are, you may be assured the matter will be dealt with; if we are not, we take an early and convenient opportunity of suggesting to the complainant some ways and means for avoiding future difficulties. Every case is studied from the view point of future prevention. This procedure will, I am sure, appeal to you.

Long Distance Service.—No doubt most of you are aware of the recent improvement in our long distance service to London and other large cities. There has been a certain response in the way of increased traffic over these new circuits but not nearly to the extent necessary if the Post Office is to get due return on the heavy capital expenditure involved. The belief that if adequate facilities were provided the traffic would follow, was a prime factor in the decision to provide additional trunk lines between Glasgow and the South. One must, of course, make allowance for present trade conditions and the fact that subscribers had to some extent lost the habit of using the services concerned, yet from the representations made regarding past inadequacy and delay I expected a greater response than has yet arisen. I feel sure, however, once you have experienced the new conditions, our traffic will go up with a bound. A few figures, based on extended records and some thousands of calls, may be of interest. On calls to London, Birmingham, Leeds, Liverpool and Manchester, and the places served through these Cities, we are now connecting 62% in five minutes or less; 84% in ten minutes or less, and 93% in 20 minutes or less. Delays of over 20 minutes to any of the places named are exceptional and due to some special circumstance. There is another point, however, with regard to "Trunks" which I feel is not fully appreciated. Between 2.0 and 7.0 p.m. charges on long distance calls are reduced by 25%. To the Glasgow business man who can arrange to make his calls between these hours the saving in costs would be appreciable. Again, between 7.0 p.m. and 7.0 a.m. the charges are halved on trunk calls for which the normal fee is 1s. or more. I commend each of these points to your consideration. I would also make a further suggestion. During the afternoon, say from 1.0 p.m., some of our long distance circuits are not fully occupied with

public work. Would it not be worth some business man's while renting a line to another centre for an hour or two for exclusive use at present tariffs? If you consider this worth looking into and will get into touch with me, I shall be only too pleased to supply information and help.

Special Facilities.—There are other admirable facilities for telephone subscribers which I am sure are not generally known, or if known are not utilised to the extent one would expect. Telegrams, for instance, can be telephoned to or from your offices or houses at all hours of the day and night during which telephone service is given. Night telegraph letters can be telephoned at any time before midnight to a Telegraph Office which is open always. A message may also, under certain conditions, be transmitted by telephone to many of the Postal Telegraph Offices connected with the exchange system. A message can be dictated for express delivery from any Post Office connected with the public telephone system on payment of the appropriate telephone fees, in addition to the express delivery fee. If you have missed the last collection, letters may be telephoned in time to catch the mail required, and delivered by post as a letter. Express messengers may be summoned—except on Sundays—by telephone to perform express services and so on. Details are clearly set in our "book of words" known as the Telephone Directory—pages 8 to 12.

Local Service.—Coming now to our local service, one of the things that occasions great surprise from an official standpoint, is the apparent indifference of many subscribers to the part they play in the formation of an ideal service. A client or customer attending at one's place of business in person would at once receive attention; there is no essential difference between a visitor of this sort and an incoming telephone call, but there is an extraordinary difference in the manner of treatment. A telephone call should take its place as a prime factor in the running of our business, yet it is a matter for wonder that the position of the telephone, in many of our offices, has not been given even the status of a typewriter. Possibly the differential treatment is due to the fact that a poor telephone service—at our office—occasions the other fellow most of the trouble. It does not, therefore, come home to us with the same conviction!

Responsibility of Subscribers.—I suggest that it would be a paying proposition to have only the best employee attending to your incoming calls. Make the job one of personal responsibility. Try it, if only as an experiment, and I dare say the result will surprise you and very pleasantly surprise your callers. Some of you may be inclined to smile and to say this sort of thing is all very fine: "We must put our house in order and the Post Office will render a perfect service." I don't want to give you any such impression, neither is it my desire to suggest that we do not receive co-operation and help from our subscribers. I am glad to say that, in the main, we do, but there is a minority to whom I would earnestly appeal, for many of our troubles are due to lack of thought on their part and the non-observance of simple regulations. At all times we are straining to eliminate trouble; there is not a member of the staff but who would do anything in reason to afford every facility to you in the conduct of your telephone business. May I ask the minority concerned for similar consideration?

Call Statistics.—To come again to figures. During 1925 over 52 million calls were originated by subscribers in this district. Of these, 45 millions—or 85 out of every 100—were effected without delay or other untoward circumstances. "Number engaged" occasioned the loss of 5 millions—or 10 in every 100. On 1½ millions—2.5 in every 100—we could not get a reply from the called subscriber. On a further ½ million—1 in every 100—we lost the calls through getting or giving wrong numbers and the remaining ¼ of a million—1 in every 200—were ineffective by reason of the junctions being engaged or from some other cause over which the subscribers had no control.

Number Engaged.—It will be seen that 85% of our traffic is disposed of without delay. The "Number engaged" bogey is responsible for delaying or losing 10 of the remaining 15%. Primarily this is due to an insufficiency of circuits between the public exchanges and subscribers' offices, but some of it is due to waste of time on calls because of initial parleying as to who is calling, who is speaking, who is wanted and other things, but greatest of all in the "wasting" process is the failure to clear lines promptly when conversations have finished. Receivers are either not replaced, or only partially so, or the attendant at the office switchboard leaves an extension through to the exchange in such a way that no clearing signal is given; in either case the result is that your lines and your clients are kept engaged much longer than necessary. Last year this trouble happened on 1½ million calls. On each of these calls two lines were kept "engaged" for 1¼ minutes longer than necessary. I leave the arithmetical position of the problem to you, simply remarking that these happenings must at some time or other have delayed your calls and annoyed you to the same extent as they bothered us. In this connection may I remind you that the Post Office is prepared to train private switchboard operators free of charge. It is of mutual benefit that the fullest advantage should be taken of this arrangement. A verbal or written communication would result in immediate attention to your requirements.

No Reply.—"No reply" calls, I am sure all will agree, are an unmitigated nuisance. They mean a great loss of time to you and much wasted effort on our part. There is more satisfaction from an operator's point of view in seeing some result from her labours, than to feel these have counted for nothing, in addition to the annoyance of the calling subscriber and possible further trouble in case of complaint.

Wrong Number.—Who has not at one time or another been very angry with the operator because of getting a wrong number or being called in error for someone else? We are responsible sometimes I know, and we are ever on the quest for the source of the trouble, yet I hope you will forgive me when I

point out that a lot of mis-carrying in this way is due to callers. During last year—and in this district alone—over 600,000 calls were either wrongly given, or, before the called number answered, the caller had replaced the receiver and so cut himself off. On nearly all these calls the required number would be rung up; in one case the caller would ascertain he had got the wrong place and would say so, sometimes with an expression of regret, rarely with an admission that the error was his; in the other case the called number would think the operator was "playing about" and would be half inclined to doubt her statement that there was no one on the line. In both cases the callers would for the most part leave the called numbers to assume the error was at the exchange. May I suggest that as an occasional test of this you will ask the caller what number he requested. I have done so on a number of occasions and can vouch for the astonishment in most instances of the caller when he found he had obtained the number asked for but not the number he wanted.

Percentage of Complaints.—An interesting point in regard to our service is the number of complaints we receive and their ratio to the traffic. In 1925 for example, we received from all sources and on all topics one written communication for every 28,000 calls.

Various Statistics, Loads, Durations, etc.—The average duration of a local call is 2½ minutes; a junction call 3 minutes; a trunk call 4½ minutes. Of the total traffic between 8.0 a.m. and 8.0 p.m. one-sixth occurs in the "rush hour" 10 to 11 a.m. The higher the "rush" load the more difficult it is to staff an exchange economically. The rise and fall of traffic may be likened to an irregular capital "M" with the morning peak slightly higher than the afternoon, which latter generally occurs between 3.0 and 4.0 p.m., with a tendency to a sharp rise between 4.30 and 5.30 when offices are closing down. Residential and suburban exchange loads are more level with only a slight fall in the evening hours. A city exchange is the pulse of the local business world, for the staff can tell at once if any unusual movement is taking place, owing to its instant reaction on the telephone system. Wet days are busier than fine, a sudden shower will sometimes drive our Central load up by thousands of calls in a very short time.

Summary.—We try to put a smile into our work. The telephone voice with a smile in it is worth its weight in gold, for at whichever end of the line it obtains it produces corresponding brightness at the other. While on such huge systems as that controlled by the British Post Office, standard expressions and official methods must obtain, there is no reason why they should not be accompanied by cordial co-operation between our subscribers and ourselves. The personal touch is the best; for that reason we ask you to come and see us at work; to tell us at any time what has gone wrong from your point of view; to be critical if need be; particularly if this takes reasonable and constructive lines; we are desirous of avoiding mental gymnastics and of the use of worn out platitudes and polite expressions of regret. Above all, we want to apply common sense to the discussion and solution of our problems, taking care, of course, that when we speak of commonsense, we do not mean only our own particular variety. In our dealings with you, whether these be in relation to accounting, new lines, additional telephones or service troubles, we are desirous of keeping our talk and our correspondence from appearing like an accumulation of wheels and girders which revolve and crush at the same time. I only hope we shall at all times convey to you the impression, and have this confirmed by action, that we have a personal as well as an official interest in the attainment of a telephone service as nearly perfect as it is possible to make it.

In conclusion and with apologies for further trespassing on your time, I cannot perhaps do better than lift a quotation from our Telephone Directory:—

"There are three parties to a telephone call: Yourself, The Exchange, the Distant Subscriber. A successful telephone call is the result of the co-operation of these three and cannot be obtained without that co-operation. It is not enough for the Exchange alone to do its work correctly. All three parties must work in harmony."

So says the book, and I say:—

"You, the Exchange and the Other Fellow, and the greatest of these is—'YOU.'"

NOTES ON TELEGRAPH PRACTICE.

BY G. T. ARCHIBALD.

(Continued from page 123.)

XIV.—Concerning Circuit Procedure.—(Continued.)

Double current Morse sounder simplex working involves the completion of the signalling of a telegram before a correction can be obtained or an acknowledgment given. With the central battery system, however, the receiving operator is able to break in at any time in order to obtain the repetition of a word, &c., and this is the invariable custom on all such circuits.

In duplex Morse working, whether double current or central battery, there is no hard and fast rule. Generally speaking, only expert operators are employed at duplexed circuits, and it is customary to make all requests for repetitions, &c., after the completion of the transmission of a telegram.

In all forms of simplex working other than printing telegraphs, the receiving telegraphist must transmit an acknowledgment signal when a telegram has been correctly received and before allowing it to leave the circuit.

Standing rules for simplex working at slip-printing telegraph circuits have not yet been laid down, largely for the reason that so far it has been customary to work one arm of a multiplex circuit at duplex instead of two arms at simplex. Up and down working as applied to Morse circuits would not be a convenient operating arrangement, since it would involve the operator in considerable movement from the sending to the receiving side and vice versa. This difficulty is not quite so important in connexion with the start-stop circuits at present in use. The receiving apparatus is positioned above the keyboard, and the operator need not change his position in order to gum up the received slip. The whole question is, however, under consideration, and it seems probable that the most suitable arrangement will be to send telegrams in batches of not more than five or six, each operator gumming the accumulated received slip after signalling his own batch.

On the introduction of Morse duplex working it was arranged to record at the receiving office the name of the addressee of each telegram and the initials of the receiving telegraphist on what was, and is still, known as the "RD" slip, and to give an acknowledgment to the sending office after each batch of four telegrams, instead of after each individual message, as in the case of simplex working. In 1886 it was decided to give the acknowledgment signal each quarter hour, irrespective of the number of telegrams received, instead of after every four telegrams, and this procedure is still in operation. Certain changes have, however, been made in the method of recording the particulars at the receiving office. Prior to 1912 each telegram entered on the RD slip had to be initialled by the receiving operator: the present practice is to initial only the quarter-hourly totals. The authorised quarter-hourly acknowledgment has always consisted of the number of telegrams and the name of the addressee of the last telegram in the batch, but a practice has grown in recent years of signalling only the number of telegrams in the batch and the first three letters of the name of the addressee of the last completed telegram. There would not appear to be any good reason why this arrangement should not now become standard practice.

In cases where the number of telegrams acknowledged does not coincide with the number sent, the sending office, when challenged, sends the first three letters of the name of the addressee of every telegram, and the missing telegram (if any) is re-signalled with a service message asking the receiving office to prevent duplication.

Soon after the introduction of duplex Morse working, the practice grew on routes served by more than one circuit of working one circuit at duplex instead of two at simplex; this method of working was forbidden in 1886, and it is still the general practice to work all Morse points on a route to their full simplex capacity before resorting to duplex working. Prima facie there may not seem to be any sound reason for a restriction of this kind, but it is a practical fact that up and down working is much more elastic than duplex working as it enables supervising officers to arrange the traffic to the best advantage.

As has already been indicated, Wheatstone working is not now a feature in the disposal of ordinary telegrams, but it may be desirable to record the operating arrangements in force when it was used for a large number of main-line routes.

The number of telegrams to be included in a single slip does not appear to have been regulated until 1900, when it was decided that the number should be limited to two or only one if it exceeded

50 words in length. On the introduction of Wheatstone—Creed working with keyboard perforating the number was increased to four with the proviso that where the keyboard telegraphist was responsible for the transmitter a greater number of telegrams might be allowed.

Serial numbering of forwarded traffic over Wheatstone circuits was not adopted until 1917, and the number was signalled but not checked at the receiving office. At the end of each batch, or each quarter-hour if the transmitter was running continuously, the forms were sorted by the key clerk into serial order in order to facilitate correction, &c. Keyboard operators were not expected to check the number of words before commencing the preparation of the slip, and it is to be feared that this departure from standard practice which had for its object the acceleration of the traffic sometimes had the reverse effect.

At one time the operator in charge of a Wheatstone Receiver was called upon to give each telegram a serial number and to record upon an RD slip the name of the addressee of each telegram; acknowledgments were given either hourly or after batches of fifty telegrams had been received. At some offices slip transcribers were instructed to pass to the receiving operator a docket upon which was recorded the serial number, the name of the addressee and the name of the transcriber. In some cases the dockets were retained and placed with the RD slips, whilst in others the names were copied from the dockets to the RD slips.

This system was cumbersome; during periods of breakdown, previous to the development of underground communications, when offices were inundated with Wheatstone slip, the system broke down owing to the difficulty of arranging for the transfer of the dockets from the transcribers to the relative circuits, and it was abandoned about 1900. From that time onward slip transcribers have not been required to make any record of the particulars of telegrams received over Wheatstone circuits.

On inland Hughes circuits, following the practice at Anglo-Continental circuits, the traffic was sent and acknowledged in batches of not more than ten telegrams. On completing a batch the sending telegraphist signalled the number of telegrams in the batch three times and at once proceeded to signal another batch if traffic was on hand. The receiving operator entered the name of the addressee of each telegram on an RD slip and affixed the piece of slip containing the batch indication below the name of the last telegram of the batch. The procedure followed in cases where the number said to have been signalled did not coincide with the number recorded by the receiving operator was similar to that observed on Morse duplex circuits. The acknowledgment consisted of the letter R (for Received), the number of telegrams received, and the first three letters of the name of the addressee of the first and last telegrams in the batch, i.e. R 10 THO-PEN. The acknowledgment was gummed to a separate RD sheet at the sending office.

The slip prepared by the sending operator was wound up in rolls and stored for reference in case of complaint of error, &c. The slip, together with the RD sheets, was retained for three months.

When Hughes working was first applied to inland working a telegraphist was employed in checking the slip gummed up by the receiving telegraphist; experience soon showed that one operator could generally gum up and check the output from a single channel and the second operator was withdrawn.

During periods when duplex working was not justified, the traffic was disposed of on the up and down system in batches of not more than six telegrams, each batch being acknowledged in the manner described above.

At first Baudot multiplex installations were worked on the Hughes system, but serial numbering was adopted towards the end of 1910. All the traffic passing over one circuit was numbered in one series, as in the case of Wheatstone—Creed working, the

received traffic being passed to a central point for check. The weakness of this arrangement was that telegrams were inadvertently passed to the circulation stage before being checked: this led to unnecessary repetitions, and the system was abandoned in 1911 in favour of a serial number for each arm of an installation. In 1916 the Hughes system was again tried, and it was definitely abandoned in 1917 in favour of the arm-serial system which is still in operation.

The arm-serial number system possesses many advantages over the batch and route serial systems: it enables the signals concerning corrections, &c. to be reduced to a minimum, it facilitates the search for the original forms when corrections, &c. are required, and it furnishes a ready check on the amount of traffic passing over a particular channel or installation.

Each arm of a multiplex circuit is identified by a letter, A is usually allotted to the first arm, B to the second, &c., and each arm uses a separate series of numbers. At first it was arranged to signal the arm indicator letter followed by the serial number, but as in so many other cases, experience showed that the arrangements might be simplified without detriment to the traffic, and the arm indicator is not now signalled. It is, however, recorded on the telegram form at the receiving office. The system in operation from 1917 to 1919 necessitated the signalling of an acknowledgment each hour, but this was abandoned in favour of the arrangement whereby the receiving operator is required to check the receipt of each serial number by striking out the appropriate number on a serial numbering form, and entering opposite it the first three letters of the name of the relative telegram. The last number is also exchanged on each channel at the close of business, and in order to avoid delay due to a breakdown of the sending apparatus it is laid down that, if nothing is received from the distant station for a period of five minutes, the distant office must be advised: if no response is made the officer in charge must be advised so that suitable action may be taken.

The arrangements for duplex working at start-stop printing telegraph circuits are similar to the foregoing.

(To be continued.)

TELEGRAPHIC MEMORABILIA.

MISS M. TYNAN (Assistant Supervisor of the Central Telegraph Office) well maintained the prestige of that huge establishment when on the 15th ult. at the Institution of Electrical Engineers she read two papers entitled respectively "Internal Circulation in the Central Telegraph Office" and "Phonograms."

In the regrettable absence of Mr. Valentine, whom nothing would keep away from these meetings except a bed of sickness, Commander Loring took the chair, and proved a most genial substitute.

Miss Tynan is probably the first member of either sex of the T. and T. Society who has accomplished the feat of reading *two* papers in one evening, and it is only unadulterated truth to say that she came through the test with flying colours. This was not only the case with regard to the literary style and the methodical manner in which the two subjects were treated, but in the well-sustained manner of the delivery of the papers, which lacked neither clear enunciation, nor a pleasurable inflexion that gave life and reality to what with a less capable reader would have meant dull monotony.

In paying this tribute to Miss Tynan's powers it may be added that although our colleague occupied the reading desk for over sixty minutes, she appeared to finish with a freshness that some of us could well envy.

The attendance left something to be desired, and candidly speaking, one hardly felt proud of the C.T.O., especially as regards the sterner sex.

The criticisms, if such they could justly be so called, were few, and with these Miss Tynan had no difficulty in successfully dealing, the welcome presence of representatives from the Traffic Section notwithstanding.

Personalia.—Our best wishes follow Mr. S. Hiscock, late Staff Superintendent T.S., who quitted us on the 11th ult., amidst the boisterously expressed kind thoughts of his colleagues in Room 67 and in many other spheres of C.T.O. activity.

One old friend writes from Manchester and remarks *re p. 109 T. & T. Journal*, as follows:—"One cannot at the moment quite see the connexion between radio matters and a fruit company," but says that he "seems to have heard of *currents* in both." Well, we will leave it at that, my dear G., but remember they mix things up differently in America, and there is no end to the wide range of the goods sold under one roof in the U.S.A.

Old friends in T.S. and T.S.F. of Mr. A. E. Thompson will be interested to learn that this rising young engineer recently supervised the erection of one of the new Czech-Slovakian wireless stations at Prag on behalf of the Standard Telephone & Cables Company, Ltd.

Congratulations to the Cable Room upon its increased number of higher appointments and to the eight happy recipients of those appointments. Congratulations also from the Cable Room to our engineer friend, Mr. Lakey, upon his appointment to the vacancy created by the retirement of Mr. T. Newlands.

Autre chose.—It is gratifying to learn from *St. Erkenwald's Chronicle*, that interesting little journal which spends its energies in keeping alive the wonderful history of the old City of London and its churches particularly, that there does not appear to be any truth in the statement published some little while ago in the Press, that the church and churchyard of St. Botolph's, Aldersgate, is to be absorbed by the Central Telegraph Office. We would like more room, most certainly, but, Oh, ye vaudals, spare us Postmans' Park!

The Daily Sketch recently published the following scathing criticism from their Riviera correspondent which we have every reason to believe, certainly as regards the telegraph service, is by no means an exaggeration. He writes:—"It is far easier to correspond with London than locally." Letters from Cannes to Monte Carlo often take three days, telegrams two, and the telephone is *une mauvaise plaisanterie*. An urgent telegram can be sent by paying triple rate. This may be delivered within 12 hours—or not."

Our readers will doubtless agree that the large amount of space occupied by the following excerpt from the annual report of the Telegraph Construction & Maintenance Company is well worth its interesting information. Cutting out the financial portion, which shows a very happy situation, it was stated that "a large amount had been expended on buildings and machinery erected to carry out a most important and interesting experiment for the Western Union Telegraph Company in connexion with a submarine cable, having some special features, which they had manufactured and laid between New York and the Azores. The chief feature consisted in covering the copper conductor with a thin metal wrapping of special high permeability alloy before being insulated with the usual gutta-percha, and cables of this kind were now commonly known as "loaded." In the particular cable to which he had referred, the alloy used was known as "permalloy," and was supplied for the purpose by the Western Electric Company of New York. The results obtained in the working speed of this experimental cable had been such that the Western Union Telegraph Company determined to take full advantage of its superiority over long submarine cables of the unloaded type, and had placed with them a further order for a loaded cable from New York to Bay Roberts in Newfoundland, and for another from Bay Roberts to Sennen Cove in Cornwall. Both of those cables were in course of construction and were being loaded with the Western Electric Company's alloy. The Telegraph Construction and Maintenance Company also possessed important and valuable patent rights relating to the loading of cable conductors including a high permeability alloy known as "Mumetal," and since those patents were likely to conflict with those for a similar purpose possessed by the Western Electric Company of New York, it was thought advisable in the interests of both companies to enter into an agreement whereby the patents should be pooled on terms of equality. That agreement had now been signed, and he had no doubt that it would prove to the advantage of submarine telegraphy. The first cable actually loaded with their own alloy had been manufactured for the Eastern Extension Company in order to duplicate the cable between Perth and Cocos Island, a distance of 1,624 nautical miles, and was now being laid by their cable steamship *Colonia*. The Pacific Cable Board had resolved to duplicate its cable from Canada to Australia, and the company had secured the order for the section of the cable to be laid between Vancouver and Fanning Island, and it was to be loaded with "Mumetal." That cable, which would be the longest submarine span in the world, would be 3,625 nautical miles in length, and they hoped to have it completed in the autumn. The original cable that they had laid more than 23 years ago had never needed repairing in all those years. Their new cable ship, the *Dominia*, was a twin-screw oil-fuel steamer with a gross displacement of 9,000 tons. She was 509 ft. in length, and was fitted with all the latest machinery and appliances for laying cable. She was capable of carrying 9,000 tons of cable (approximately 3,700 miles) and was launched at Newcastle-on-Tyne on the 16th ult. Loaded cable could be used for direct working at high speed over much longer distances than cable of the ordinary or unloaded type, with the result that relay stations could be dispensed with and increasingly longer spans would probably be required in the future. Referring to the retirement of Mr. Francis Lucas from the board and from the management, his Lordship remarked that Mr. Lucas, who is largely responsible for the technique connected with the cable-laying equipment of the *Dominia*, joined the Telegraph Construction Company on its formation in 1864, and went to sea in the *Great Eastern* in

1865-66. He was now the sole survivor of those who took part in the voyage when the first Atlantic cable was successfully laid. As long ago as in 1874 he was first sent away in charge of a cable-laying expedition, and by the time he was appointed a managing director 20 years ago, he had laid 75,000 miles of submarine cable."

The *Electrical Review* informs us "Norge 1," the airship in which the well-known Polar explorer Amundsen is to attempt to fly from Europe over the North Pole to Alaska, and which will pass over London on its journey, has been equipped with wireless. By special arrangement with the Marconi Co. the vessel is to be equipped with transmitting apparatus which will enable the commander to keep in touch with either land or ship stations at distances up to 1,000 miles. Receiving apparatus specially designed to cover a wave-range of from 300 to 25,000 metres will also be carried, whilst direction-finding apparatus will be installed which will enable the navigators accurately to determine their course and direction even over the Pole itself when the compasses will be of no navigational value, since all direction will be due south. The direction finder will enable all the long-wave European and American stations to be picked up and oriented with ease, large loops having been erected right round the envelope of the airship; by this means the sensitivity of the apparatus has been made much greater than any hitherto employed on any aircraft. The Marconi Co. is making arrangements to forward any reports from amateurs of reception from the airship during its flight to the North Pole to the wireless officer with the expedition. The airship has been reconditioned in Rome, and is now carrying out its trials.

The *Westminster Gazette* wireless reporter is responsible for the notes which now follow. He says: "A motoring friend who is also a radio enthusiast, invited me the other evening to test the elementary theory of wireless power. Equipped with a crystal set and a portable three-valve set, we went in the car to Orchard Street, W., which runs beneath the aerial of 2LO on Selfridge's roof.

"The crystal receiver was set going, and when the signals were properly tuned in the crystal cup was taken off its plug-in connexions and a small carbon filament lamp was plugged in, the telephone terminals temporarily shorted. Nothing happened.

"We tried the valve set, inserting the lamp in the 'phone terminals together with a small condenser to preclude the possibility of the lamp being lit by the direct current of the batteries.

"The lamp remained inactive, but attempting the effect of various tuning adjustments the lamp began to glow at times, giving a faltering light for two or three seconds.

"The expert decided, however, that this result was due not to the transmissions of 2LO, but to the electric news sign opposite the front of Selfridge's.

"After this we tried the valve set and lamp in various parts of Mayfair, but with no better results, although, once away from the stores itself the signals were stronger. I learned later that in the Selfridge, building itself it is sometimes impossible to pick up 2LO on account of the steel in the construction of the building.

"Just before the 2LO programme ended we stopped the car on the drive through Hyde Park and again tried the valve set. The results were better in so far as the glow of the filament was steady and almost continuous.

"The light suddenly went out after three minutes, and we removed it, putting the 'phones in circuit: 2LO had closed down!

"My expert convinced himself by mathematics that he could light the head lamps of his car by wireless within a few miles of Rugby, and with a crystal set pick up enough energy to light the filaments of his valve set.

"If he ever succeeds there will be a second use for the high-power stations which the B.B.C. hopes to erect.

"In fact, it is not wildly hypothetical to say that, if wireless stations go on growing in number and power as they have done in the past few years, the Government's Electricity Bill will never be needed."

Those of us who are interested in master-clocks such as those used for electro-magnetic synchronisation of the C.T.O. and other large offices, may wish to learn that before long "Great George," the 9½-ton bell in the tower of the University of Bristol, will begin sounding the hours. It is interesting to learn that the mechanism which will actuate the bell was made in Bristol, Prof. David Robertson, head of the Electrical Engineering Department in the Engineering Faculty of the University, having designed the apparatus which is now being tested. It consists of an electric motor-driven striking machine to lift and drop the hammer; a time device to cause the former to function; a master pendulum to drive the time machine and electric clocks throughout the building; and the time signal apparatus to regulate the pendulum by means of time signals received from Greenwich over the Post Office lines. In the event of the failure of the public supply of electricity, the first stroke will be sounded only.

AUSTRALIA.—The *Sydney Morning Herald* states that with a view to improving the wireless communication services of the Royal Australian Navy, short-wave, continuous-wave apparatus is undergoing preliminary tests. A proposal that a strong naval communication reserve should also be formed is being considered. Though no definite action is likely to be taken for some time, it is likely that the naval authorities will invite experienced amateurs who have pioneered short-wave work in Australia to join the naval wireless reserve.

CHINA.—From the *Financial News* and other sources we gather that the Chinese Telegraph Administration at Harbin recently increased by 20% the cable charges on telegrams to foreign countries. Charges are payable in local paper dollars, and that a sidelight on the conditions in China is an intimation from all the foreign Cable Companies at Shanghai to the effect that, since they have for a long time not received from the Chinese administration any share of the moneys paid by the public to the administration for the dispatch of telegrams to places abroad, the companies will no longer accept other than Government telegrams from the administrations in the Yangtse Valley provinces unless accompanied by cash.

Further news on this matter, supplied in this instance by Reuter's agency, affirms that, the recent decision of the foreign Cable Companies not to accept any but Government telegrams dispatched from the administrations in the Yangtse Valley provinces, which may be handed over to the Companies by the Chinese Telegraph Administration in Shanghai, unless such messages were accompanied by cash, Reuter's correspondent is informed that the Chinese Telegraph Administration is now settling accounts half-monthly. So long as such settlements continue, telegrams will be forwarded in the usual way.

CHILE.—The Chilean Government, says *Commerce Reports*, is reported to be interested in the purchase of the Commercial Telegraph Co.'s properties. That the report may be well founded is apparent from the fact that, at a meeting of the board of directors of the Commercial Telegraph Co. it was agreed to authorise an individual to enter into an *ad referendum* contract for the sale of the properties for \$8,250,000 (paper). It is understood that the Government hopes to combine with the State telegraph service certain lines of the Commercial Telegraph Co. and in other places to avoid competition by these lines.

CZECHO-SLOVAKIA.—The *Gazette de Prague* says that the first radio emissions in Czecho-Slovakia were made in 1923, when trials were carried out in the spring at Kbely with 1-kw. transmitting plant. On June 7 of that year the Radiojournal Company was created, with a capital of 500,000 crowns, of which the Radioslavia concern subscribed 255,000 crowns. At first operations were difficult as the only broadcasting station available (at Kbely) was constructed for telegraphy, and certain alterations had to be made. The first six concessions for receiving stations were granted on Oct. 10, 1923; on Dec. 31 of that year 47 licences had been issued, at the end of 1924 the number was 1,564, and at present there are 32,000 listeners in Czecho-Slovakia. Since the inauguration of the Stranice broadcasting station the number of listeners has increased considerably, and it is thought that the figure of 50,000 will be exceeded at the beginning of March.

From Reuter's we also learn that the Postal Administration has displayed great activity in developing the Czecho-Slovak telephone and telegraph systems during 1925. It has linked up important commercial and industrial centres with large towns, connected many provincial towns with existing systems, and created local means of communication, exchanges, &c. From Jan. 1 to Dec. 31 (1925), 226 new inter-urban telephone lines and 183 telephone stations were inaugurated. This year the installation of new international telephone lines—Prague-Paris, Prague-Vienna, and Prague-Cracow—will be proceeded with specially. It is also proposed to extend the Prague suburban telephone system, to install at Moravska Ostrava relay plant (of English construction) for international communication, to put into service the inter-urban telephone exchange at Zizkov, and to establish new exchanges at Prerov, Prostejov, Decin, Zvolen, Novc, Zámky, and Poprad.

GERMANY. The German Wireless Co. (Telefunkengesellschaft) claims to have beaten all speed records in the transmission of wireless photography between American stations and the German station at Nauen. According to the *Manchester Guardian*, it has succeeded in transmitting 15,000 apertures per second, a speed equivalent to the transmission of 25 words per second. This achievement shows progress, as text and diagrams can be transmitted simultaneously with pictures. At the annual dinner of the Institution of Electrical Engineers in London, the president, Mr. R. A. Chattock, remarked that the Marconi Co. had recently transmitted his photograph and signature across the Atlantic Ocean by means of "wireless." Photographs of the Lenglen-Wills lawn tennis match at Cannes were transmitted over the telephone wires from Nice to Paris by means of the Belinograph process.

GREAT BRITAIN.—Fining a man 10s. 6d. with 31s. 6d. costs at Hull, on Feb. 10, for having an unlicensed crystal set, the stipendiary magistrate said the licence must be obtained before the parts were put together, and whether the results were good or bad. A written reply to a question in the House of Commons points out that since the passing of the Act of last session, proceedings have been instituted in 49 cases: 43 cases have been tried, of which 42 were successful, the fines imposed ranging from 4s. to £20 10s.

Following the successful experiment of installing wireless receiving apparatus in a moving train and picking up broadcast programmes during a journey from Bristol to Cardiff and back, the Great Western Railway announced that on March 2 the Cornish Riviera express, which leaves Paddington at 10.30 a.m. for Plymouth, was equipped with a wireless installation similar to that used in the special train which carried out the Bristol-to-Cardiff experiment. Loud-speakers were set up in one of the dining cars, and the compartments of a first-class coach were fitted with headphones. The reception was successful, but was subject to interference from the lighting dynamos under the coaches.

INDIA.—The annual report on the post and telegraph services for the year 1924-25 shows, that the number of radio telegrams exchanged with

ships at sea by coast stations in India and Burma was nearly 20,000. A number of official telegrams was also exchanged with the British naval station at Matara, Ceylon. The service between Burma and the Malay Peninsula via Rangoon and Penang continued to work satisfactorily. Communication was also established between Rangoon and Sabang (Sumatra) for meteorological purposes. Wireless communication with Kabul, via Peshawar, was maintained, and traffic was passed whenever the condition of the land line necessitated it. The Marconi arc station erected for the Chinese Government at Kashgar continued in operation and exchanged official messages with India via Peshawar.

Facilities have been offered by coast stations whereby ships at sea equipped with direction-finding installations can obtain bearings on the coast stations as an aid to navigation. Bearings thus obtained on Diamond Island in unfavourable weather have been particularly valuable, and results elsewhere have been satisfactory. The report further states that the British official Press *communiqués* from the Oxford radio station were received at Jutogh and passed to Reuter's Agency for distribution to subscribing newspapers. As usual, this service was interrupted for some weeks during the hot weather owing to weak signals from Oxford and atmospheric interference.

ITALY.—The Società Italo-Radio has recently inaugurated a wireless telegraph service between Italy, Egypt, Palestine, and Iraq.

JUGO-SLAVIA.—The *Gazette de Prague* states that a Jugo-Slav company has been granted permission to construct in Jugo-Slavia a factory for the production of porcelain insulators. The national administrations of Jugo-Slavia themselves absorb every year porcelain insulators to a large value. Moreover, the requirements of the Jugo-Slav market are bound to increase since the Government proposes actively to push forward the extension of the national telephone and telegraph systems. It appears that Germany is interested in the establishment of this factory.—*Reuter's Trade Service* (Prague).

MEXICO.—The Western Union Telegraph Co. announces that its vice-president, Mr. J. C. Willver, who is in Mexico City, has concluded a contract with the Mexican Government for the introduction of a modern telegraph service in Mexico. According to the *Financial News*, this will mean the ending of the monopolistic system and the opening of a way for other companies. The service will be extended southward through "all America cables." The agreement is subject to the approval of Senor Calles and the boards of the Western Union and Mexican companies.

PARAGUAY.—Reuter's agent at Asuncion states that a radio-broadcasting station, erected under the auspices of the Military School at Asuncion, has been completed and a trial programme instituted.

SOUTH AMERICA. It is announced that the South American republics of Ecuador and Colombia have lately joined the Bureau International de l'Union Télégraphique.

SPAIN.—Reuter's Barcelona agency reports that the new Barcelona broadcasting station (EAJ1) on the top of Tibidabo (1,745 ft. high), the loftiest hill in the vicinity of the Catalonian capital, has just been completed. It will have a wavelength of 325 metres, and the station will be the most powerful one in Spain and one of the most powerful in Europe, and its altitude will contribute in its due ratio to the power. The official inauguration took place on Feb. 25.

VIENNA.—Orders for the extension of the Budapest-Vienna telephone cable are reported to have been placed with a syndicate composed of the Felten and Guillaume Company, the Siemens-Schuckert Company, and the Ver. Glühlampenfabrik, says *The Electrical Review*.

VIA IMPERIAL.—A meeting of the Council of the Empire Press Union was held on March 12 to consider the resolutions adopted at the Imperial Press Conference held in Australia last autumn. Sir Robert Donald, chairman of the Council, presided, and he was supported by Lord Burnham, president of the Union. Regret was expressed at the delay in the erection in England of "beam" radio stations. Reference was also made, says *The Times*, to the Pacific Cable Board's intention to employ "loaded" cables in duplicating the Pacific channel, and the decision of the Western Union Telegraph Co. to lay a new "loaded" cable across the Atlantic: in view of the increased capacity afforded by "loaded" cables, it was decided that the Imperial Government be requested to take early steps to lay a new "loaded" cable across the Atlantic, and, in the meantime, to hire two channels from the Western Union Telegraph Co., so that full advantage might be taken of these new facilities. The motion to refer the resolutions to the Union's standing committee on cable and wireless communication was carried, and a special committee was appointed to watch the development of broadcasting and to co-operate with the standing committee.

The *Westminster Gazette* (London) recently stated in an article on the proposal for Government control of the B.B.C., that, "The danger of closer governmental control is that the great possibilities of broadcasting as a popular amenity might be checked by the desire to test the service by revenue conditions as is too much the case with the Post Office."

In one word, our estimable contemporary fears that government control would continue to make broadcasting a paying concern, and in so saying pays an interesting tribute to Post Office efficiency!

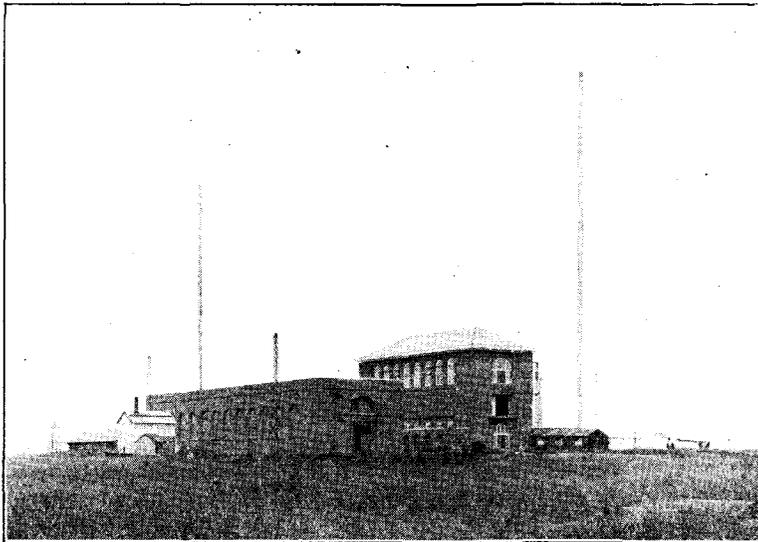
Neutrality.—The most fatal of all neutralities is that which results not from choice but from irresolution.—*Guicciardini*. J. J. T.

TRANSATLANTIC TELEPHONY.

BY MAJOR A. G. LEE, M.C., B.Sc., M.I.E.E.

THE long continued experiments and research of the American Telephone and Telegraph Co., in combination with the Western Electric Co. and the Post Office in this country, aiming at the establishment of telephone communication between England and America, have at last borne fruit. On Sunday, February 7, 1926, at 4.0 a.m. two-way conversation was first opened between this country and New York.

The scene for this historical occasion was set in the valve transmitting room at Rugby. The line from the receiving station at Wroughton, near Swindon, had been extended to Rugby so that talking and listening could be done at the same time. A small group of engineers who had been concerned with the work sat round a

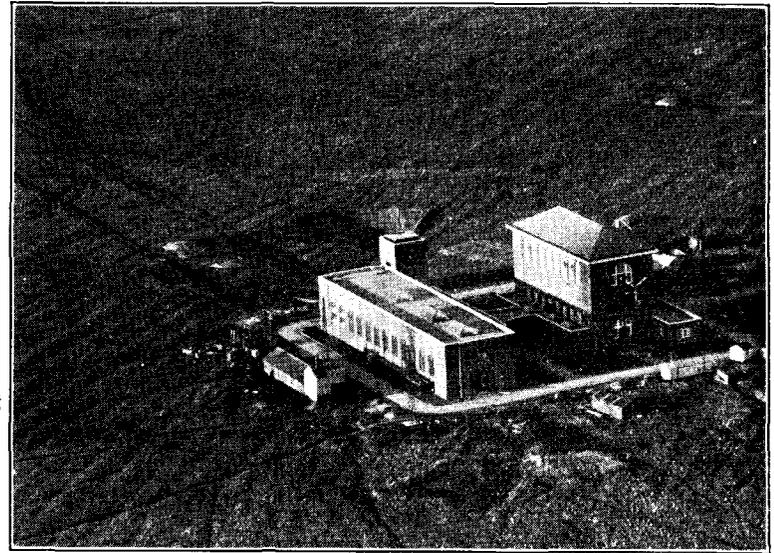


RUGBY STATION. 820 FT. MASTS IN BACKGROUND.

table listening to the preliminary tests and waiting for the pre-arranged time for two-way conversation. Promptly on time one of the party went into the silence cabinet and after some preliminary tests said "Hullo, New York! who is that speaking?" The reply came back "Bailey," and after that talking went on all day till late in the evening.

The next chapter in the course of events took place a month later, on March 7th, in the new Repeater room at the Trunk Exchange, London. During the interval the work had been consolidated, lines tested out, frequency characteristics improved and so forth, until it was judged that a public demonstration could be given with a moderate degree of certainty of success. Representatives of the London newspapers and a few technical papers were invited to witness the tests, and if the conditions were favourable it was proposed to allow them to talk to their press colleagues in New York, where a similar gathering had been arranged.

At the London end the press representatives arrived at 1.0 p.m. and the interval between 1.0 p.m. and 1.30 p.m. was filled in by a lantern lecture given by Mr. E. H. Shaughnessy, O.B.E., who described first the details of the masts and power plant at the Rugby Station and then shewed slides of the telephony equipment and valve amplifiers. The receiving station built by the Post Office at Wroughton was then described. He then outlined the



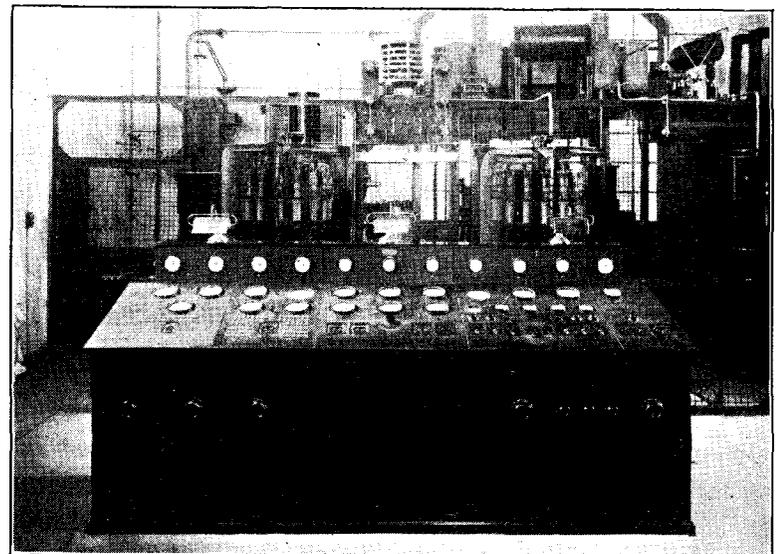
VIEW OF RUGBY STATION TAKEN FROM TOP OF ONE OF THE MASTS.

arrangement on the American side, the receiving station at Houlton, Maine, the transmitting station at Rocky Point, Long Island, and the land lines connecting these points to New York.

At 1.30 p.m. the first press representative was shewn into the telephone cabinet and connected to New York. At the American end it was of course 8.30 a.m., and the early hour, combined with the weather, which was described as "fit to beat the band," had proved too much for the American reporter, and only one representative was ready. Miss Mabel Abbott of the *World*. This lady, however, proved more than equal to the occasion, and did the honours for the American side until her male confrères arrived.

One by one the press representatives went into the silence cabinet and talked to their opposite numbers in New York. The conversation was, the whole time, as clear and as easy as over a good trunk line in this country.

When conversation was first commenced the surprise on the faces of the journalists present was worth going a long way to see. They had probably expected, by considerable straining, to hear a weak, scratchy sound punctuated by atmospheric crashes, and they were given instead what telephony men understand as a 10-standard mile talk.



TELEPHONY SET, AND CONTROL BOARD.

A large number of headphones were provided so that all the party could listen at the same time to the conversation proceeding from the telephone cabinet.

An endeavour was made to strike a conservative note and to make it clear to the Press representatives that the success of the demonstration did not mean that we could start a commercial service at once. Much remains to be done before this is possible.

It is, perhaps, rather early to consider what will happen in operating if this becomes a commercial service. Although English is spoken on both sides of the Atlantic the same words do not always mean the same thing on both sides. For example, the American operator says "Are you through?" meaning "Have you finished?" and if the reply is "Yes," promptly pulls out the plug!

THE C.T.O. GOLFERS AND BOWLERS.

On Feb. 19 the C.T.O. Golfers and Bowlers held their annual dinner at "The Old Ship," Charing Cross, under the presidency of Mr. John Lee. The visitors included Messrs. A. J. Waldegrave, R. A. Little, J. P. Leckenby, and A. G. Tydeman. The usual toasts of the "Golfers and Bowlers" were proposed and responded to in jocular manner and the personal references made were the cause of much amusement. Mr. A. W. Edwards, replying for the Golfing Section and Mr. T. G. Donno for the Bowling Section, spoke of the progress made in the inter-departmental contests and expressed sanguine hopes for much better results during the forthcoming season.

A break was made in the musical programme for the purpose of presenting the winners with the prizes for the past season. The championships were won in the Golfing Section by Mr. E. Woods, runner-up Mr. R. Ham; and in the Bowling Section by Mr. J. Wesley, with runner-up Mr. J. Burley.

During the evening Mr. A. W. Edwards presented the Golfing Section with a handsome silver cup as a perpetual trophy and also as a memento of his pleasant association with the Club. The cup was afterwards handed to Mr. E. Woods, who will hold it for the ensuing year. We asked ourselves the mournful question: "Was this gift of A. W. E. the outward and visible sign of the latter's imminent intention to part company with the ancient game as well as with that other "Old Ship" the C.T.O.?" Heaven forbid!

The artistes, with Mr. Edward Bonner at the piano, were Miss Gertie Vincent, Mr. Stanley Pedley, all three entralling the happy audience with music of a high standard, while Mr. Edward Burdett conclusively proved how "the quickness of the hand deceives the eye," and Mr. Basil Mitchell gave "The Stage Doorkeeper." The rumour that anyone reached the 19th hole at the first drive, it is authoritatively stated, is *not* in consonance with the verities!

AUTOMATIC TELEPHONES FOR A COUNTY DEPARTMENT AT PRESTON.

The first automatic telephone apparatus to be used in Preston came into official operation on March 17, when the department of the architect to the Lancashire County Council "changed over" from the ordinary magneto system of communication to a process known as the "relay automatic." The department is not housed in the County Offices, but in premises in Winkley Square.

The department will continue to be in touch with the County Offices in Fishergate by a private line, and both for communication between the two buildings and the central exchange in Glover Street the magneto system, which, of course, requires a switchboard operator, will still be needed. The new automatic installation, which is operated by numbered dials, concerns merely the 20 'phones in the building.

The installation is similar in type to that used in the telephone system at Fleetwood, where the service of the whole town is automatic, but it differs in technical detail from the systems in vogue at Accrington and Blackburn, where the exchange operator was replaced by the dial process some years ago. A building to house the apparatus of an automatic system is now in course of construction in Preston, adjoining the G.P.O., but it will be about three years before the general body of 'phone subscribers will be called upon to "change over" from the magneto to the dial method.

The installation that began its work in the county architect's offices in Preston is similar to that to be supplied to the departments of the Burnley Corporation.—*Preston Daily Post.*

PROGRESS OF THE TELEPHONE SYSTEM.

THE number of telephones working at the end of January, 1926, was 1,366,562, a net increase of 8,654 over the December total. The increase is relatively small, owing to the fact that under the present quarterly method of accounting cessations are heaviest in the first month of the quarter.

The analysis of Telephone stations as at the end of January is given below:—

Telephone Stations	London.	Provinces.
Total at Jan. 31	480,139	886,423
Net increase	3,325	5,328
Residence Rate Installations—		
Total	94,664	158,757
Net increase	1,352	1,965
Exchanges		
Total	107	3,876
Net increase	—	12
Call Office Stations		
Total	4,384	15,662
Net increase	—	79
Kiosks—		
Total	224	1,576
Net increase	12	56
New Exchanges opened under Rural Development Scheme of 1922—		
Total	—	844
Net increase	—	9
Rural Party Line Stations—		
Total	—	9,773
Net increase	—	19
Rural Railway Stations connected with Exchange System—		
Total	—	678
Net increase	—	4

The number of inland trunk calls dealt with during the month of November, 1925, was 7,023,329, an increase of 767,404 (or 12.3%) over the total for November, 1924. Notwithstanding the fact that during the month storms and gales caused serious interruptions to communications in various parts of the country, the average number of calls dealt with per working day, 280,993, was the second highest average on record.

The number of calls made to the Continent during November was 18,495, an increase of 786 over the figure for the corresponding month 1924. Incoming calls numbered 22,108 or 2,023 in excess of the November, 1924, total. As a result of the breakdown of the larger cable between England and Holland in the middle of the month, there was a temporary though marked falling off in the Anglo-Dutch traffic.

Further progress was made during the month of February with the development of the local exchange system. Among the more important exchanges extended were:—

- LONDON—Croydon, Harrow, Hounslow, Park.
- PROVINCES—Kilmarnock, North Shields, Slough, Uxbridge.

During the month the following additions to the main underground systems were completed and brought into use:—

- Edinburgh—Kirkcaldy.
- Pontypridd—Tonypandy.
- Kirkcaldy—Leven.
- East Grinstead—Uckfield.
- Linlithgow—Bowness.
- Liverpool—St. Helens.
- Purley—East Grinstead.

while 97 new overhead trunk circuits were completed, and 92 additional circuits were provided by means of spare wires in underground cables.

The Telegraph and Telephone Journal.

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NOTICES.

As the object of the JOURNAL is the interchange of information on all subjects affecting the Telegraph and Telephone Service, the Managing Editor will be glad to consider contributions, and all communications together with photographs, diagrams, or other illustrations, should be addressed to him at the G.P.O. North, London, E.C.1. The Managing Editor will not be responsible for any manuscripts which he finds himself unable to use, but he will take the utmost care to return such manuscripts as promptly as possible. Photographs illustrating accepted articles will be returned if desired.

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FIFTY YEARS OF THE TELEPHONE.

BY fairly common consent March 10, 1926, was considered as the fiftieth anniversary of the invention of the Telephone. March 10, 1876, was the historic date on which Alexander Graham Bell spoke over a wire extending between two rooms in a Boston building to his associate, Thos. Watson, saying, "Mr. Watson, come here, I want you." Telephonic speech was thenceforward an accomplished fact, and the development of the telephonic art proceeded so successfully that in the following year a rudimentary public exchange was working in Boston. In 1878 an exchange was opened in New York. In August, 1879, the first telephone exchange in London was established. Manchester and Liverpool followed suit before the end of the same year, Glasgow in 1880, and Paris and Berlin in 1881. As far back as 1877, however, von Stephan, the great German postmaster-general, who was quick to envisage the future which lay before the new invention, had brought fifteen rural villages into touch with the general telegraph system by means of telephone connexions, and by the end of 1879 over 500 villages were brought into connexion with the outside world by the same means. It is stated on the authority of an American writer that this was the first application of the telephone anywhere in the world as a means of regular public communication, the system in Boston not having developed from an

arrangement by which renters of private lines, having common interests, could communicate with one another into a regular public exchange, until some months after the opening of the first public lines in Germany. Be this as it may, there were, despite the doubtings and difficulties which the infant colossus had to overcome, 30,000 telephones in existence in America by the end of 1880, and probably not another 5,000 in the whole of Europe. Before the end of the nineteenth century there were upwards of a million telephones in existence, a total which had increased to 10,000,000 by the end of 1909, and at the present time it may safely be said that there are 27,000,000 telephones in service in the world.

With similar rapidity the range of the long-distance lines was developed. From a distance of a couple of miles in 1876 it increased to 230 miles (New York—Boston) by 1884; and by 1892 New York and Chicago, 900 miles apart, were in telephonic communication with each other. By 1915 trans-Continental telephony was an accomplished fact, and New York could converse with San Francisco on the Pacific Coast, 3,400 miles distant. As regards long-distance communication involving the use of submarine cables, it may be here recorded that the London—Paris service was opened in 1891 (some years before speech was obtainable between London and Scotland) and the past month saw a night service established between London and Berlin, about 650 miles distant, an earnest, we hope, of wider trans-European developments.

Some doubt may be felt whether 1926 is the most appropriate year to celebrate the jubilee of the telephone. The actual date of the birth of a great invention is always a debatable point. Most inventors are indebted to their predecessors, for few, if any, of the scientific devices which have most benefited mankind have been entirely the work of a single mind. Phillip Reis, of Homburg, invented an instrument named by him the telephone, by which he succeeded in transmitting musical sounds in 1861, and Meucci, an Italian refugee in New York, produced a primitive form of telephone which he patented in 1871. This apparently consisted of a mouthpiece and earpiece connected mechanically by wires, over which he believed he could obtain improved hearing by electrifying the apparatus. Elisha Gray was only two hours later than Bell at the United States Patent Office with a telephone whose receiver was constructed on much the same principle as his rival. In 1877 Edison invented the carbon transmitter, which, perhaps, may be said to have made commercial telephony practicable. However, Bell's message to Watson was the first recorded talk over an electric telephone, and there is much to be said for considering the date of that message as the starting point of telephony. But whatever doubt there may be on this point, there is none whatever on the brilliant success of the invention, its all-conquering progress and unspeakable utility to mankind. Those objections which are sometimes advanced against its importunity and "intrusiveness" are, after all, either academic or humorous. Who, after enjoying its benefits and experiencing the wide range of its usefulness would be without it? The inevitable answer is the best test of the value and the popularity of the telephone.

HIC ET UBIQUE.

MARCH 19 was an important date in Anglo-Continental telephony. On the evening of that day a night service was inaugurated with great success between London and Berlin, Hamburg, Bremen, Cologne and Frankfurt. The service is at present restricted to the hours 6 p.m.—7 p.m. The charges for a three minutes call between London and Berlin is 16s. up to 8 o'clock, and 9s. 7d. for the rest of the night.

This, despite many previous rumours and reports, is the first public telephone service to be afforded between England and Germany. This service is preliminary to the full service between the two countries which will be provided later on.

"I see boasting by the Telephone Service," says *Time and Tide*. "of the large number of calls put through, but do not see even mention of the large number of calls which failed."

The explanation is surely that they were not a large enough number to boast about. The total number of failures would not look imposing, instructive, or awe-inspiring, and would besides be a bitter disappointment to thousands of hard-working humorists.

It is reported by the *Electrical Review* that in Tokio new telephone subscribers must bear the entire expense of installation, at a cost of from 1,500 to 1,700 yen. With the yen at par this would be about £160 in English money. In this country telephone installation is free.

We hear that the long-distance telephone services in China have been commenced between Kweihsia, Sumbuanhsien, Paotowchen, and Wuyuan, and between Shanghai and Wusih, Kiangsu Province.

It will be seen that Major Lee concludes his interesting account of the recent experiment in Transatlantic telephony by saying that although English is spoken on both sides of the Atlantic, the same words do not always mean the same thing on both sides. This is true enough. A proud American parent, for instance, will boast of the possession of a fine, "husky" baby. If an Englishman finds that his baby is husky, he sends for the doctor, or his mother-in-law. The word "husky" seems to be transatlantic equivalent of "lusty" which may perchance have an indelicate ring to the chaste American ear.

A deplorable example of the confusion between American slang and English occurs in the *Saturday Review* :—

The jubilee of the telephone comes pat on the first sustained conversation that has ever been held across the Atlantic. Thus far has Graham Bell's invention been developed in fifty years. In another half-century it may be as natural for an Englishman to talk to a friend in Pekin as it is for him to call up his office or his home. There is, however, this danger that the Government, vitally interested in old-fashioned methods and with enormous sums invested in plant that must soon be obsolete, will do what it can to restrict and discourage wireless telephony. That is the worst of State trading. It is always ready to sacrifice the public convenience in the interests of its own monopoly. To protect the State-owned telegraphs it first laughed at the telephone as an interesting toy, then became frightened by its popularity, then deliberately tried to "stunt" its growth, and finally annexed it for itself. One consequence is that there are about nine times as many telephones for every hundred of the population in America as in England.

Here the writer puts a perfectly good English word *stunt* in inverted commas as though it were slang, and thus contrives to give his sentence a meaning opposite to that which he presumably intended!

The charming essayist who writes each week over the initials "Y.Y." in the *New Statesman* says :—

Nothing could be odder than the difference in the attitude of the ordinary human being to the postman's knock and to the telephone-bell. For some strange reason, many people live in the constant hope of receiving pleasant messages by post. Bills, income tax demands, appeals for charities, money-lenders' circulars, and so forth, may day after day fill their letter-box. But they harbour no resentment against the postman on that account. They have a burning faith in the ideal letter, even if it never comes. It may, according to the temperament of the individual, contain money or those childish cross-shaped kisses or the laughing gossip of a friend. It is said that thousands of people never quite lose the hope—however little warranted—that one day a letter will come to them through the post, enriching them for the rest of their days. How many people have ever had their hopes raised in this fashion by the ringing of a telephone bell? Our instinctive response to the postman's knock is one of welcome, but to the telephone bell is one of hostility. This seems all the more difficult to understand since all the unpleasant things I have mentioned come by post and there is as yet no way of sending bills by telephone.

Referring to the question of telephone etiquette, and the old grievance of unseasonable and importunate calls, "Y.Y." suggests that everybody should have his telephone hour, which could be given in the directory, and that no one, except for urgent reasons, should feel justified in ringing him except during that hour. We fear this would open up an appalling prospect to our traffic experts. Imagine the flow of a private subscriber's traffic, usually spread over some 15 hours, compressed into one, and this process extended to some hundreds of thousands of subscribers! It is true that all subscribers would not select the same hour; but the results of any such project are nevertheless frightful to contemplate. The writer concludes his article in these admirable words :—

Whatever may be said in dispraise of the telephone, however, there are few of us who would willingly be without it. There would be few more difficult forms of self-denial for a man who has been accustomed to a telephone in his house than to order the telephone to be taken away. Without a telephone, he would feel at times as though he were marooned on a desert island. His telephone puts him within a few moments' distance of friends, business, shops, amusements. With a telephone at his side, he can lie in bed, like a Sultan, and issue orders, and his orders will be attended to more quickly in the great shops than if he went there in person. To him the telephone is the equivalent of an army of messengers. He can achieve more with it than a Persian monarch with a retinue of runners. It is as efficient and as marvellous as a pair of Seven-League Boots, and who in his senses would refuse a pair of Seven-League Boots? As to what the effect of the telephone has been on the happiness of the human race, it seems to me probable that we are just as happy since its invention as we were before. It is the greatest nuisance among conveniences, the greatest convenience among nuisances. That—when you remember some of the things man has invented—is fairly high praise.

REVIEW.

"*Wörterbuch der Elektrischen Nachrichtentechnik.*" *Dictionary of Technological Terms used in Electrical Communication. Part II, German-English.* By O. Sattelberg. (Published by Julius Springer, Berlin, 319 pages.)

This compact and handy work comprises the vocabulary of the whole field of electrical communication, besides words employed in electro-physics, magnetism, mathematics and other allied studies. We have searched in its pages for a variety of key words in use in automatic telephony, cable work, radio-telegraphy and telephony, and indeed in electrical communication in all its latest developments, and have in no case failed to find them, with their suitable English equivalents. The compiler, Herr Sattelberg of the German Telegraph Technical Department, has evidently consulted all the latest English and American sources in his researches. The book, which is in convenient form, and which, though comprehensive, can be carried in the pocket, is indispensable to all who have occasion to translate German technical books, papers or documents. Technological dictionaries soon get out of date, especially in connexion with an ever-developing technique like that of telephony or radio-communication, and the present work fills a decided want. We can cordially recommend it.

W. H. G.

INTERNAL CIRCULATION OF THE CENTRAL TELEGRAPH OFFICE.

PHONOGRAMS.*

BY MARY A. TYNAN.

I MAY perhaps be permitted, at the outset, to explain the apparent want of connexion between the two titles of the paper to be read this evening. It may be asked, "What have Internal Circulation and Phonograms to do with each other?" The answer is: "Nothing at all," and yet there is some reason for the combination.

When I was honoured by an invitation to contribute to the Society's programme, it was suggested that the subject of the contribution might perhaps be "Women's Work in the Central Telegraph Office," but a difficulty arose, inasmuch as that, in the main, women's work is identical with that of the sterner sex. There are, however, two exceptions, and although there is no apparent connexion, the Circulation and the Phonogram duties are combined under one jurisdiction, which for the last three years has been wielded by a Chief Supervisor, a woman's rank which corresponds to that of a male Superintendent.

The duties of these two branches of the work of the Central Telegraph Office are performed by women (with the exception of occasional loans from the male staff to assist in times of pressure in the Phonogram Room), and the supervision is entirely feminine, the total personnel under the sway of the Chief being between 400 and 500.

I will endeavour to give some idea of the various functions of these two departments, which constitute what may perhaps be termed the women's corner in the official daily routine.

INTERNAL CIRCULATION IN THE CENTRAL TELEGRAPH OFFICE.

The life of a telegram may be said to cover the time that elapses between the moment of handing in until it is placed in the hands of the person to whom it is addressed. (That, at any rate, is all of its life that concerns the Post Office, though sometimes it acquires a nasty habit of resurrection.) The actual transmissions over the wires occupy but a small proportion of that life. The majority of the remainder is spent in travelling from point to point within the office precincts or in actual delivery. This state of movement is very fittingly termed Circulation, and to distinguish it from the routing of the telegram from office to office is known as Internal Circulation.

In small offices this internal circulation is the simple process of passing the forms from the point of receipt to the point of despatch, very often on an adjacent table, and is the work of less than a minute, but as the office increases in size and these points are more widely separated, this process becomes more and more complicated, so that at large offices it presents a considerable problem. Where there are many points of handling there is a potential source of delay at each, and the end to be achieved is to keep the traffic in a state of constant fluidity at every stage, so that there may be no halting in the journey from start to finish.

The Central Telegraph Office, occupying as it does the greater part of five floors of a great building, has its peculiar difficulties and problems.

The building was not originally designed for telegraph work, but has been acquired and adapted, little by little, over a period of fifty years.

When the first small army of telegraphists arrived from the old Telegraph Street building, one floor sufficed to house the various branches of the work; and to what was then the top floor (now the third) was led all the provincial and metropolitan circuits and all the street tubes. The circulation was comparatively simple, all conveying being performed by hand. The accommodation was soon found to be inadequate, and overflow departments were set up wherever space could be found. The handsome and spacious reception hall on the ground floor, known as the Central Hall, was the first sacrifice to the growing service, and later part of the second floor was occupied, and again an entirely new floor was built to accommodate the metropolitan circuits. In recent years, the rapid development of a new service, phonograms, has claimed a large area on the first floor, so that at the present time, nearly the whole of the building is occupied with telegraph traffic, and the problem presented to the circulation—to bring these scattered units into such close touch with each other that delay due to relative distance shall be almost entirely eliminated—is no mean one.

The work divides into four main units according to the geographical areas served, viz.: City and registered address traffic on the ground floor, or Central Hall; Continental and Imperial Cable work on the second; Provincial on the third; and Metropolitan and Outer London on the fourth. These are sub-divided according to the needs of the circuits served, and

eleven circulation tables are occupied with inland, and one large unit with foreign telegrams.

The different processes of the work at the circulation tables are collecting, sorting, marking, circulating, tubing, and distributing.

The forms are collected from the message racks by hand and conveyed to the circulation tables where they are rapidly divided into their relative pigeon holes by a sorter who knows from memory the correct point for distribution for every one of the 350 provincial offices working direct to the C.T.O. The messages for all other provincial destinations are marked with the code of the transmitting office, at this first sorting point if possible, but if the routing is not known from memory they are passed to a second officer known as the marker, who marks the necessary reference to the Provincial Circulation Book. The forms, therefore, leave the first handling point, ready for "circulating" into their relative boxes for onward conveyance or "distribution" to the circuits.

The marking of Metropolitan traffic was at one time effected at the first stage of treatment in all cases, but as it is a much slower operation than provincial marking, it was decided some few years ago that the general traffic would be accelerated if these particular addresses were segregated to a central marking unit on the fourth floor, in the vicinity of the metropolitan circuits. The desired result was very materially achieved and a marked economy in marking staff effected, and the arrangement has the further advantage of allowing the smaller staff engaged on the work to become more expert. It is true that a certain proportion of this traffic has to be re-tubed to a more distant distribution table after marking, but a rapid service is maintained and the additional drag is not very considerable.

The circulation system of the Central Telegraph Office, the different units of which are linked by a series of tube conveyors, has been very ingeniously and graphically drawn by a member of the office staff, Mr. A. W. Randall, and shown in Fig. 1, which gives a very good idea of the size and complexity of that system and of the areas and distances served.

The main sections may perhaps be briefly described:—

In the Central Hall on the ground floor all the outgoing tubes to the City and West End, 26 in number and 14 incoming tubes, are situated, the tubing work being performed by a staff of male tube attendants.

The carriers from these tubes are, on receipt, dropped on to a conveyor band and carried to a point where their contents are extracted and placed on the sorting table, any specially enveloped work being first withdrawn and handed direct to the supervisor. An average of 24,000 "A" forms per day are received in the C.T.O., one half of which, approximately, arrive in the Central Hall. These receive the treatment already described, and any which are for delivery in any of the tube office areas, are re-circulated without being copied.

Telegrams bearing registered abbreviated addresses are retained for further treatment in the Central Hall, and are hand-conveyed from the sorting table to the relative marking point.

The work in connexion with registered addresses forms an interesting part of the duties in this section, and its history dates back to the introduction of the sixpenny telegram in 1885. Prior to that date the address of a telegram was signalled free of charge, and when this privilege ceased the public naturally and inevitably curtailed the address as much as possible, and there was a great demand for the registered address of two words. Much ingenuity in the choice of words was exercised, and the early registrants generally managed to indicate their business by the titles chosen. There was at first no machinery for recording these addresses at the circulation tables, and manuscript lists were passed round and memorised by the staff, help in this respect being afforded by the fact that the businesses indicated by the registration were fitted into the clearly defined commercial areas into which the City was more distinctly divided in those days.

It quickly became necessary to provide some means of reference, and books were prepared, at first by hand and later printed on linen pages. To-day the references are held on the card index system, the cards being stored in containers sunk below the level of the circulation boxes but within good visual distance of the marker. The system has distinct advantages over the old method of book reference, as the daily additions and alterations necessary soon rendered certain pages of a book almost illegible, and not only slowed down the rate of working but often led to error. The labour and cost of renewal of books was considerable, but the process of reference is found to be somewhat slower when using a card index, as the region of selection is limited by the size of the cards. There are 36,000 addresses registered for London, and it is found that the complete unit A—Z can be accommodated in front of every two markers, the working being therefore arranged in teams of two.

A complete record of the addresses of registrants is maintained in the Central Hall for any necessary reference.

The introduction of delivery "indicators" has very considerably lessened the number of references required for the circulation of registered address.

The "indicator" is a word coined to indicate phonetically the relative delivery office of the particular registration involved, and is inserted in the address after the name. Thus, Energy "Bilgate" London, immediately suggests circulation for Billingsgate, "Piccy" for Piccadilly, "Fen" Fenchurch Street, and so on. The registrants, who are notified of their appropriate words, which are signalled free in inland messages, have taken very generally to their use, and 75% of the inland messages received for abbreviated addresses bear the indicators.

per officer per hour. That the system of checking by a responsible officer is very effective is instanced by the very few errors that are disclosed. Out of a total of 80,000 per month dealt with only two or three errors are recorded.

Provincial Circulation, as its name implies, is concerned with the disposal of all traffic from and to the great commercial and industrial centres as well as all the other large towns of the kingdom, and is of great relative importance in the work of the Central Telegraph Office.

The circulation and marking of provincial telegrams presents less complication than metropolitan traffic, the town of destination being the only essential point of scrutiny, and as the centralisation of London marking at another point clears away that class of work at the first sortation the remainder is very rapidly dealt with. To secure the closer association of the offices in the financial centre of the City with the big commercial centres of the country, the pneumatic street tubes from these offices are led direct to the third floor at the centre table; and for the same reason the circuits working to the London railway termini are also situated on that floor.

The Provincial Gallery is served by one central and three auxiliary circulation tables. The ideal arrangement of circuits is the grouping of the more important lines in the vicinity of the central table, and when the present conditions of upheaval, due to the addition of yet another floor to the building, are brought to a satisfactory conclusion, the realisation of this ideal may be accomplished in a full measure.

The tracing of provincial destinations which cannot be found in the circulation book is referred to the centre table, where experienced officers with the help of various directories determine the appropriate transmitting office or advise non-delivery as the case may be.

The Central Bureau for Radio-telegrams is situated at the centre provincial table, and is a new and interesting branch of circulation work. Messages for ships on the high seas, which are within radio reach of British coast stations, may be handed in with an open address at any Post Office, the necessary routing being undertaken by the Central Telegraph Office. The position of the ship is first determined by reference to *Lloyds' Daily Index*, which gives the latest point and date of communication. The appropriate coast station is then decided by the use of charts which indicate the approximate range of the different transmitting stations. The spark stations operate for a radius of 250 miles, Devizes for 1,500, and, until recently, the Oxford station for 2,500 miles, and the exercise of a nice discrimination is called for to determine disposal to ships calculated to be near the confines of these different ranges. The question of the long distance traffic has, however, been simplified by the opening of the Rugby station, with its practically unlimited reach.

The acceptance of these telegrams presents considerable difficulty to the counter clerks, especially at the smaller offices, and the Central Bureau has been constituted the official enquiry point for information and advice on all matters concerning this work, a special telephone having been provided for this purpose. Considerable research is at times necessary to establish the exact location of a ship, and supplemental to the information gained from the lists and charts, assistance is from time to time sought from and accorded with much courtesy by Lloyds, Marconis, and the officers of the Ship and Shore section of the Overseas Telegraph Branch. The information given to the counter clerks enables an exact address to be provided in the first instance, and the result of the institution of this special branch of the Bureau's activity has naturally been a diminution of the number of open addresses received.

Metropolitan Circulation.

As already mentioned, the marking of all fully addressed London telegrams is effected at a central point on the fourth floor, where a staff conversant with the London delivery areas is maintained. The streets proper to each are to a certain extent memorised. As in the case of the registered addresses, there was no other system but memory working in the early days of telegraph circulation, and, indeed, it was considered a reproach to refer to a delivery book at one time. I am told only one copy was available. It was then the practice for each circulation officer to specialise in particular branches of local knowledge, and there were the experts in, say, the banks, or theatres, police stations, or public-houses, clubs, fire stations, &c.

Nowadays it is unfortunate that memory marking is jeopardised by the frequent changes of delivery areas consequent upon the introduction of the Centralisation System in the London districts. Knowledge gained from experience is rendered futile, and more frequent resort to the London Delivery Book is necessitated than was formerly the case.

The demolition of the inter-communication switch and the establishment of concentrator working has occasioned a slight alteration in metropolitan circulation, as all stations are now known by their relative codes, instead of, as formerly, by number, but their arrangement on the concentrators being alphabetical, the telegrams are sorted in two or three alphabetical sequences for conveyance to the concentrator traffic points.

Cable Room.

The whole of the Cable Room is served by one large circulation unit where all inward and outward foreign traffic is treated. Direct tubing is in operation from and to Threadneedle Street Office, Reuters, the Cable Companies, and certain banks. The circulation work of this section is performed by the cable room staff and is therefore outside the control of

the Chief Supervisor. One exception occurs in the case of the incoming traffic from the Imperial Cable, which is dealt with by officers from the provincial circulation. Card indexes of Imperial cable and of ordinary Post Office abbreviated addresses are held at the point, and all telegrams are marked for the transmitting office before despatch.

The collection and distribution of telegrams in all the inland telegraph galleries is performed by hand, junior and probationary telegraphists and girl probationers being employed on the work. Mechanical conveyors of different kinds have been tried and in turn abandoned. Cord carriers were used very generally for some years, but they proved to be unsatisfactory. The vibration of the motors gave rise to complaint from officers working in their vicinity, the cords were a constant source of trouble and annoyance and the stoppages due to mechanical troubles were very frequent. The Lamson carrier is employed in the Foreign Gallery and an endless band conveyor in the Phonogram Room.

The communication between the various circulation tables is effected by means of an elaborate system of pneumatic tubes worked on the vacuum principle and arranged in loops of two or three sections each. The forms are placed in cylindrical carriers made of a durable fibre and held in position by a flexible steel spring, a well packed carrier taking 15 ordinary sized forms. The standard transit time from point to point is 10 seconds and the tubing interval has been fixed at 15 seconds to ensure that there shall not be two carriers at one time in any section of the loop. Any violation of this rule is apt to cause a block in the tube and serious delay results, and to prove the freedom of transit, a test carrier of distinctive colour is passed through each section every quarter of an hour, the non-arrival of any such carrier being the signal for investigation.

It often happens that the normal routing of the carriers cannot be followed or that special treatment is desired for certain classes of traffic. To meet these needs a system of specially marked carriers has been instituted and a distinctive coloured band or design calls the probationer's notice to the carrier on which is a label giving the legend of its necessary treatment.

As originally designed the outgoing tubes were led to a table apart from the sorting table, and it was necessary to pass over the sorted traffic to its relative tube tray. By a system introduced in the phonogram room and later adapted for the majority of the other points, it is now arranged that these tubes shall be fitted at the sorting table either just above or below the level of the boxes and on the side opposite the sorting staff, so that the forms can be enclosed in a carrier and tubed to their destinations without any intermediate handling.

The incoming carriers are self-ejected, and drop into a leather-lined trough, the contents being extracted and placed on the circulation table for treatment.

All the duties in connexion with the Dudley tubes are performed by girl probationers. The work calls for alert attention and for rapid and dexterous handling, and is, on the whole, admirably carried out by this youthful staff, aided by helpful and vigilant supervision.

In an office of such dimensions as the Central Telegraph Office changes of circuit location are inevitable, and this factor has been especially rife during recent years. These changes very often entail alterations of the internal circulation, and unless carefully noted by the staff, delay is apt to arise through mis-circulation. All recent or daily changes of this kind are exhibited prominently on opal notice boards at each circulation table, and every officer is required to acquaint herself of the contents before taking up duty.

The daily amount of traffic passing through the Central Telegraph Office averages 140,000 in summer, and 100,000 in winter, and a double circulation treatment is incurred with the majority of the messages, while certain classes of traffic call for threefold treatment. The number of handlings is therefore large, averaging 8.5 per message, being in some cases as many as 16, excluding circuit treatment.

The question of paramount importance in the matter of internal circulation is naturally that of delay. What is the extent of the drag consequent upon this elaborate system of sorting, tubing, marking, and much handling? A system of check has been established which maintains a survey on all point-to-point transactions and furnishes valuable data for the strengthening of any weak points, and for co-ordination of the various units. It is inevitable, that, on account of the additional processes involved in some cases, the delay is not exactly uniform, but the returns show that despite the drawback introduced by double treatment, the general overall drag from time of receipt over the wires to the time of final distribution at the circuit of disposal was at the last return recorded at the time of writing 7.5 minutes, of which 3.1 minutes were occupied by collecting and distributing.

An interesting comparison is furnished in one of Mr. Archibald's highly interesting articles on "Telegraph Practice," now appearing in the *Telegraph & Telephone Journal*, in which the drag at Birmingham is mentioned as being 6½ minutes. I believe I am right in saying that the Birmingham telegraph circuits are all situated on one floor level and served from one circulation unit, and it is therefore a matter for some measure of self-congratulation that with the highly complex arrangements needed for the service of such an office as the C.T.O., the increase in delay is so relatively small.

I will venture to quote further from the same article in which we are told that "it has to be borne in mind that a no-delay system is not required. There is nothing to be gained by expediting the internal circulation of traffic unless that traffic can be disposed of immediately on arrival at the point of

treatment. At the larger provincial offices, five minutes or slightly under is all that is required."

From this aspect, which is highly reasonable, it would appear that the results achieved in the Central Telegraph Office very nearly approximate to the ideal, though it must in perfect truth be admitted that this perfection cannot be guaranteed at all times.

To attain such results it goes without saying that never-tiring and ever-vigilant supervision is required and given.

The duties of the supervisor are many and varied. She must exercise careful watch at every point, satisfy herself that the collectors bring in the work promptly after receipt, that the sorting is rapidly and correctly performed in even sequence, that the marking points suffer no hold-up from heavy rushes of work, examine the boxes frequently to check mis-circulation and watch the drag, keep an eye on all the tubing duties to ensure that the tubes are fed in due rotation, see that the quarter-of-an-hourly test of the tubes is maintained, and take action to prevent further tubing if any irregularity is discovered, and at the same time be ready to give prompt treatment to the various problems in disposal submitted for her advice, both from her own officers and from surrounding telegraph divisions.

The supervision of circulation tables forms, therefore, no mean quota in the work of the C.T.O., and it has been found more satisfactory to retain the personnel on purely circulation duties for a fixed term, than to alternate with divisional working.

I hope that these few notes will have succeeded in some measure to show the means employed in the largest telegraph office in the kingdom to solve its particular problems of rapid and rhythmical circulation.

(To be continued.)

AUTOMATIC TELEPHONES IN EAST ANGLIA.

OPENING OF IPSWICH AUTOMATIC EXCHANGE.

A NEW Strowger automatic telephone equipment, manufactured for the Post Office by Automatic Telephone Manufacturing Company, Ltd., Liverpool, has just been completed at the Ipswich Post Office in Cornhill.

As the County town of Suffolk, with a population at the 1921 census of 79,371, Ipswich well merits this improvement in its facilities for communication. It stands above the left bank of the River Gipping, from which it takes its name, and which here widens into the tidal estuary of the Orwell. Although a Roman villa has been discovered in the vicinity, the original Saxon settlement at the head of the Orwell was doubtless the first of any historical importance. In 991, Gipeswic or Gipeswich, as it was then known, was sacked by Vikings. Ipswich owes its subsequent prosperity to its situation on a harbour admirably suited for trade with the Continent. By 1086 the townsmen had acquired the privileges of burgesses when Roger Bigot kept the borough in the King's hands. In 1200 King John granted Ipswich its first Charter, confirming the town to be held at fee-farm, exempting the burgesses from tolls and similar customs, and granting them a gild-merchant.

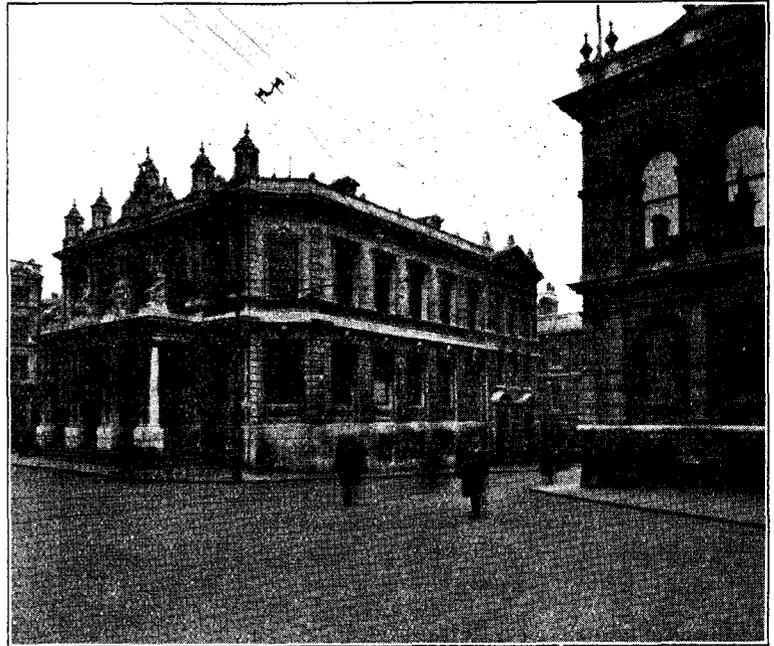
In the older portion of the town there are still several interesting antiquarian remains. Thus Sparrow's house (1567), so named after a family which occupied it for two centuries, has ornate gabled fronts to two streets. Then there is the Neptune Inn (1639), and Archdeacon's Place (1471) is another still earlier example.

Cardinal Wolsey (1471-1530) was a native of Ipswich, and the Gateway (1528) named after him, is a Tudor brick building, the only remnant of the Cardinal's foundation to supply scholars to his great college (Cardinal's College, now Christ Church) at Oxford.

Twentieth century Ipswich industries include large engineering and agricultural implement works, railway plant works, artificial manures, boot and shoe manufacture, &c. The port boasts a dock of over 30 acres and a large extent of quayage. The imports are principally grain, timber, and coal, and the exports agricultural machinery, railway plant, artificial manures, oil-cake, &c.

The equipment, which is located on the ground floor of the Post Office, has a present capacity for 2,000 lines, of which there are 1,640 subscribers, and 290 P.B.X. lines equipped. There are thus 17 Regular and 3 P.B.X. rotary lineswitch units installed in the switchroom, together with one first-group selector rack, two second group selector racks and a 2-bay repeater rack. Complimentary equipment in the basement comprises a main distributing frame, intermediate distributing frame, meter rack and test desk.

The system at Ipswich is 4-digit, subscribers' numbers lying in one or other of the following groups: -2,000 2,099, 2,300-3,099, 3,200-3,999,



IPSWICH POST OFFICE, HOUSING AUTOMATIC EXCHANGE.

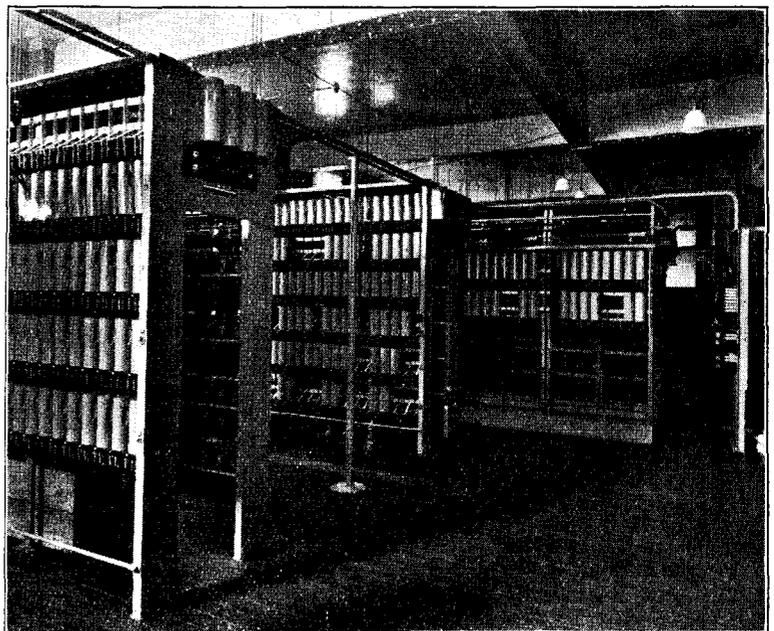
The groups of numbers allocated to P.B.X. lines are: -2,100-2,299, 3,100-3,199.

The undermentioned are special service numbers:

Junction and Trunk Calls	0
Enquiry	91
Test Desk	99
Phonograms	90
Rural Party Lines	93

In addition to a 7-bay meter rack carrying the usual subscribers' meters, there is at Ipswich a traffic meter rack, a feature of the installation which aptly demonstrates another outstanding advantage of the A.T.M. (Strowger) Automatic Telephone System.

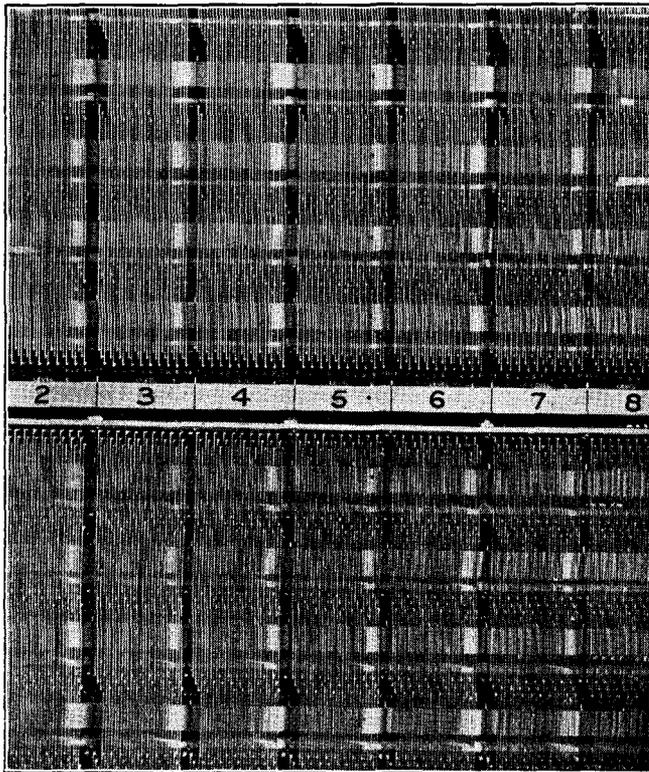
In every telephone area, whether manual or automatic, it is the traffic, either estimated, or actually determined, which governs such factors as the number of subscribers per operator's position, the number of junctions between two given points, or in the case of A.T.M. equipment, the ratio of group and final selectors to primary rotary line switches, etc.



VIEW OF SWITCHROOM, SHOWING SELECTOR TRUNK BOARDS. ROTARY LINE-SWITCH UNITS IN BACKGROUND.

In manual telephone exchanges traffic data is obtained by what is known as a "peg count" carried out by the telephonists on duty, and therefore necessarily subject to the possibility of error. In the case of Strowger equipment it is practicable to enlist the more accurate service of mechanism in the recording of the required traffic data over any desired period, and this is, in fact, provided for on the traffic meter rack at Ipswich and elsewhere. This rack is equipped with four special duty meters, which perform the following functions. The congestion meters automatically indicate the number of times the last choice of a group of trunks is engaged, and thus record the number of lost calls directly due to trunk shortage. Associated with each congestion meter is a traffic unit meter which operates every half minute during the period the congestion meter is energised, thus translating the lost calls into terms of lapsed time.

The overflow meter indicates approximately the number of calls rendered ineffective owing to all circuits in a group being engaged, whilst a total traffic record will indicate the number of times the switches in any given group are brought into use. To this end a separate meter is provided for each group of switches, and is operated by the release relay belonging to that particular group.



LINK FRAME WIRING SELECTOR TRUNK BOARD.

It will be seen that this special meter rack ensures the accurate recording of all requisite traffic data, and, put to intelligent use, should prove invaluable to the traffic department by enabling them to efficiently and economically calculate the minimum switching and trunking combination for the particular area with which it is associated. The Post Office are to be congratulated upon the meticulous attention now being devoted to the automatic compilation of guaranteed traffic figures.

The power supply to the Ipswich Automatic equipment and subscribers' sub-stations is controlled through the medium of a three-panel switchboard mounting the motor, starting and control switches, ringing control switches, ammeter, voltmeter, and battery charge and discharge switches.

Duplicate main batteries of the Premier Accumulator Company's manufacture are provided, and consist of two sets of 25 cells in lead-lined wood boxes of H.M. 14 type, the plates being type H.D.S.

The present capacity of each battery is 556 ampere hours, and there is cell accommodation for additional plates up to an ultimate capacity of 1,050 ampere hours. Both batteries are supported on single tier racks.

There are two charging motor generators, each having an output of 165 amperes at 57 volts. Each set comprises an enclosed ventilated shunt-wound meter for operating on 460 volts D.C. supply direct coupled to a shunt-wound dynamo arranged for voltage regulation between 50 and 68 volts.

As in the case of other A.T.M. Automatic Exchanges, that at Ipswich is equipped with complete and efficient supervisory and fault signalling apparatus arranged to indicate immediately any abnormal condition of either exchange apparatus or line, a provision which ensures minimum dislocation of the service, and, in fact, leads to the removal of most minor faults before the subscriber has become aware of their existence.

As an instance of the thoroughness of this automatic supervisory system a contact voltmeter is mounted on the power board and connected across the distribution fuse board bus bars. Should the battery voltage fall to the lower limit of 46 or reach the maximum, 52, the voltmeter closes a circuit via its indicating pointer, whereby an associated audible and visual alarm is actuated, calling attention to the battery's condition. Thus although the exchange officials would ordinarily pay regular attention to the charge and discharge of each battery at stated intervals, there is this additional safeguard in the event of that duty being neglected or overlooked.

Every contingency, whether probable or improbable, is similarly safeguarded by this very effective system of supervisory alarms and signals.

The telephone density of Ipswich (approximately one to every forty inhabitants) leaves much to be desired. Apart from its local industries the surrounding country is mainly agricultural and thus lends itself to rural telephone development as tending to improved communication with the county town. It is confidently anticipated that the introduction of the automatic telephone system will stimulate such development.

TRANSFER OF MR. CHARLES WHILLIS.

It is with mingled feelings that we have to record the transfer of Mr. Charles Whillis, M.I.E.E., from the Technical Section, Superintending Engineer's Office, Newcastle-on-Tyne, to the Construction Section, Engineer-in-Chief's Office, on the occasion of his promotion to the rank of Assistant Staff Engineer. Pleasure in his promotion is tinged with regret at the loss of a man of outstanding personality and character coupled with a humane understanding of and sympathy with his fellow men.

Mr. Whillis's departure took place at short notice and precluded the possibility of arranging an entertainment at which to bid him goodbye, but a large number of members of the staff of the Northern District Engineering Department met in the Superintending Engineer's Office, on March 9, for the latter purpose, and at the same time presented him with a bureau of Chippendale period as a token of their good will and for remembrance.

The chair was taken by Mr. J. R. M. Elliott, M.I.E.E., Superintending Engineer of the Northern District, who paid eloquent tribute to Mr. Whillis's ability as an engineer, and those personal gifts which had endeared him to all those with whom he came in contact. In reminiscent vein Mr. Elliott recalled the change which had taken place since Mr. Whillis entered the P.O. service over 30 years ago, and vividly depicted the difficulties with which the embryo engineer of those days was confronted in his quest for knowledge, difficulties which no doubt had much to do with the development of character but which the average present-day youth would regard as an insurmountable barrier.

Messrs. Baldwin, Andrews, Motyer, and Cook expressed the congratulations of the staff. Mr. Baldwin called attention to the fact that Mr. Whillis was the second officer from the Northern District who, within the last three months, was called to take up an important position on the Headquarter's staff.

In accepting the gift, Mr. Whillis paid generous tribute to the assistance which he had received from all branches, and referred particularly to the good relations and friendly spirit which had always existed between the various sections of the Northern Engineering District, a spirit which appeared to permeate those who came into the district as well as those who had grown up in it, and made for efficiency to an extent which could only be appreciated by those who had served elsewhere, and should always be regarded as an almost sacred heritage to be preserved by all at present in the Service and future entrants.

The serving of light refreshments brought a very pleasant function to an agreeable conclusion.

The Northern District will be much poorer through the loss of Mr. Whillis's genial personality, but our loss is Headquarter's gain.

H. R. J. D.

TRUNK TELEPHONE LINES IN INDIA.

Remarkable strides, says the *Daily Telegraph*, in long-distance telephony have been accomplished in India during the past year, and the line between Delhi and Calcutta will be opened on April 1. There is already direct communication between Patna and Lucknow.

With the completion of the connexion between Calcutta and the new capital the Posts and Telegraphs Department will have carried out practically the entire ambitious project which was taken in hand three years ago. There only remains the 1,250-mile line between Calcutta and Bombay, on which work is proceeding. The cost has been enormous, and even optimistic experts now doubt the financial results.

The scale of charges has not yet been decided, but the rate between Calcutta and Delhi is likely to be five rupees (6s. 8d.) for three minutes, and between Calcutta and Bombay probably fifteen rupees (£1).

OUR NEIGHBOUR—ST. BARTHOLOMEW'S.

THERE were many wonderful examples of good fellowship and kindly feeling both during and following the Great War, and that splendid thought for the French nation in whose country the larger portion of the war was fought, and was so finely shown by the British nation in the adoption of certain stricken and shattered towns of France, will surely always live and have its effect upon the relationship of the two countries. Such fine examples might well be emulated in our everyday life, and in this connexion what could be finer than for each large business house to adopt, say, a hospital or other institution, such as an orphanage, and look after its welfare and interests? Much is already done to help hospitals and kindred institutions by means of collections and donations, and while all praise is due for the financial assistance rendered and without which many of them would cease to be, such collections are more sporadic in their incidence than would be the case if a particular industry or business house made a hospital, orphanage or similar charity its own specific charge, and thus follow the excellent international example given.

It was, indeed, as the result of the war that the Central Telegraph Office Staff became more intimate with that neighbouring and old-time institution—St. Bartholomew's Hospital. It was a splendid suggestion that resulted in the memorial to their brethren taking primary shape in the endowment of a bed therein, supplemented by a plain memorial tablet recording the names of the fallen, placed in the main portico of the C.T.O. Building in St. Martins-le-Grand. Not a week has passed since the endowment of this bed in July, 1921, without flowers being subscribed for and placed by a member of the staff at the side of the bed in the "Hope" Ward of the Hospital, and thus is the memory of those members of the staff who, as the memorial tablet records, "Died for England" treasured. The "Hope" Ward is for male patients, and while the women of the C.T.O. were quite satisfied that the memorial bed should not be placed in other than a men's ward, they, nevertheless, felt that they also would like to have a bed in a ward for women patients. Accordingly, with that pertinacity for which the women of the Central Telegraph Office are renowned, they quickly set to work to find the ways and means to raise the required thousand pounds to endow their bed in St. Bartholomew's Hospital, and in November of 1922 their hopes were realised as, after gigantic efforts, the staff of the Central Telegraph Office held a three-days bazaar in the City Memorial Hall, with the result that a sum of £3,550 was realized. With such a sum not only was it possible for a second bed to be endowed in St. Bartholomew's Hospital but also beds in the "London" and the "Garrett Anderson" Hospitals, the surplus being devoted to the Post Office Sanatorium Fund.

These fine instances of assistance did not terminate with the endowment of the beds, for ever since, either as the result of football matches between the "Centels" and the students of St. Bartholomew's, dramatic performances, organ recitals, and more recently a dance, certain sums have been remitted to the hospitals from time to time. During the "Fleet Street week for Bart's," the women of the C.T.O. furnished and ran a stall at a Bazaar in the Mansion House and so indirectly contributed to the support of that Hospital, while, more recently they collected and remitted £250 to the "Garrett Anderson" Hospital for its extension fund. These examples might be multiplied, but one individual effort deserves publicity. It is that of a member of the permanent Night Staff who never failed to be present with his collecting box in the men's cloak room on a certain day each week throughout the year, and was thus enabled to remit considerable sums to the London Hospital. Although now superannuated, this officer still continues his useful labours, and has fully earned the Life Governorship conferred upon him.

It is not usual to do good in order to gain personal benefit, and no such thought has ever entered the minds of the men and women

of the Central Telegraph Office when they have undertaken these fine works. Recognition has, however, been received in the shape of Life Governorships from the various hospitals, but they are as nothing in comparison with the valuable asset which the staff as a whole has obtained. Many are the cases which have been referred to the hospital authorities through the medium of the Governors, and the splendid treatment received has amply repaid the financial service rendered.

This article has not been written with any desire to extol the beneficent actions of the staff of the Central Telegraph Office, because it is probable that there are many other offices throughout the kingdom whose efforts in this direction are even far-reaching. The generosity of Post Office staffs is proverbial, but if there should be any office in London or in the country which has not yet adopted its local hospital or similar institution the foregoing information will not have been given in vain if it leads to the cultivation of that mutual interest so essential to the well-being of the community.

A. W. EDWARDS.

RETIREMENT OF MR. T. E. P. STRETCHER.

ON the occasion of his retirement from the service, Mr. T. E. P. Stretcher, Superintending Engineer of the North-Western District, was entertained by the members of his staff and other friends and colleagues in the service, at a Smoking Concert held in the Victoria Hotel, Preston, on the evening of March 3, when he was presented with a William IV silver tea and coffee service. Mr. J. S. Terras, Assistant Superintending Engineer, presided over a large company, and among many others present were Mrs. Stretcher with other ladies, and Messrs. T. B. Johnson (Superintending Engineer, N.E. District), M. J. Medlyn (Superintending Engineer, S. Lancs. District), V. R. Kenny and A. E. Stoeker (Assistant Surveyors, N.W. District), J. T. Whitelaw (Telephone District Manager, Manchester), S. O. Allen (Telephone District Manager, Blackburn), R. T. Vity (Postmaster of Preston), J. Curran (Postmaster of Southport), T. J. Collins (Postmaster of Wigan), F. W. Best (Executive Engineer, Rochdale), S. Upton (Executive Engineer, Blackburn), W. J. Rolfe (Executive Engineer, Preston Technical Section), J. T. Bramwell (Executive Engineer, Lancaster) and Mr. R. A. Jones (Staff Officer, Preston).

Mr. Terras, in making the presentation, after mentioning that Colonel Purves was greatly disappointed at not being able to come himself to Preston to make it, referred to Mr. Stretcher's ability as an administrator and to the feeling of confidence, respect, and affection which his staff entertained towards him. He remarked that outstanding qualities in Mr. Stretcher's work in the N.W. District had been his regard for the position and prestige of the Engineering Department in its relations with other branches of the public service and with the outside world, his concern for seeing that engineering officers in the various towns had adequate and suitable office accommodation, his skill in conducting negotiations for the department, and particularly his constant endeavour to treat all members of his large staff with the most scrupulous fairness. After observing that Mr. Stretcher was going away in vigorous middle-age with the capacity for getting much enjoyment out of existence for many years to come in his new home in Shropshire, and that the good wishes of the staff extended equally to Mrs. Stretcher, Mr. Terras made the presentation in a scene of much enthusiasm, the health of Mr. and Mrs. Stretcher being drunk with musical honours.

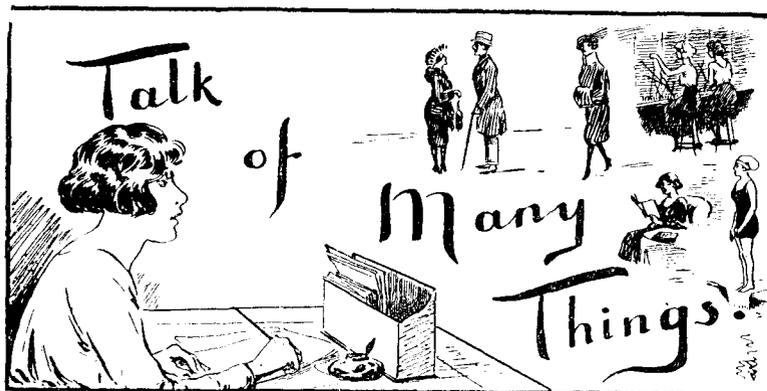
Mr. F. W. Best, in paying a special tribute on behalf of the engineering officers in the district, referred to Mr. Stretcher's high reputation as a chief who looked after the interests of his staff and to his charm and goodheartedness.

Mr. R. A. Jones paid a similar tribute on behalf of the clerical staff in the district: he made reference to Mr. Stretcher's high conception of the dignity of the Civil Service and to the way in which he had upheld its best traditions.

Mr. Stretcher, in responding, said words really failed him to express adequately the feelings of Mrs. Stretcher and himself on receiving so handsome a present and such a demonstration of affection from the members of his staff and his other old friends in the service. He thanked the staff of all ranks for the splendid service they had rendered to the department through himself, and said that no man could have been surrounded by a more loyal or conscientious staff. He ended by expressing his warmest wishes for the future success of every member of the staff and extending a hearty invitation to everyone to visit Mrs. Stretcher and himself after they had settled down at Church Stretton, with the single proviso that they did not all arrive on the same day!

During the evening a capital musical programme arranged by Mr. C. H. H. Bott was carried through, all the gentlemen taking part being members of the staff.

WE TELEPHONISTS



A Versery Crime.

I HAVE in my possession an old volume of poems. It is dog's-eared and battered, and its fly leaves and margins are decorated with crude writing and drawings reminiscent of the efforts of cave-man. It contains the fragment of an anonymous poem which must attract attention by reason of the extraordinary incidents it relates. At first sight and to the matter-of-fact reader it appears sheer nonsense, but as anyone knows who belongs to a literary society, the more nonsensical and apparently meaningless a poem, the greater its truth and the more profound its philosophy. The fiercest discussions rage and roar around the simplest innocence. Were this poem to be discussed at a literary society the members would immediately separate into five schools of thought—those who were courageous enough to dismiss it as balderdash, those equally brave who thought of it as being in the Munchausen style, and those who regarded it as an anticipation of Father Knox. The unreasoning and illogical people who subscribed to these opinions would naturally be ignored because, of course, as everyone knows, there is something in everything—even in nothing. The schools of thought whose protagonists would command attention and respect would be the materialistic and the idealistic. The arguments of these deep-sea thinkers would easily refute the uninformed criticism of the first three. The poem I refer to is as follows:—

Hey diddle, diddle,
The cat and the fiddle
The cow jumped over the moon
The little dog laughed to see such craft
And the dish ran away with the spoon.

The materialist would say that it was now generally accepted as a fact that the first line was an expression of surprise, one might almost say of astonishment, and not, as was hitherto supposed, an unceremonious form of address to a Mr. Diddle or a Mr. Diddle-Diddle. This view, he thought, would be supported by consideration of the events subsequently recorded. Turning next to the second line, he thought that the association of a cat and a fiddle was extremely natural for two reasons. Firstly, the strings of the fiddle would be made of catgut. His critics would, of course, urge that catgut was not made from cats, to which he would merely answer that he never said it was. Secondly, the noise of a fiddle is often, very often, not unlike that of a cat. It was, however, neither the time nor the place to discuss whether cats play fiddles and if so, why, and how, and what cats and what fiddles. Such questions would inevitably involve consideration of the cat's idea of music. Then he would draw attention to the most remarkable statement in the third line—an ultra-Wellsian conception which, if accepted literally, would shake our belief in gravity and arouse doubts in Einstein. Small wonder perhaps that even the gravity of the dog was disturbed. But behind the laugh of the dog—a little dog be it noted—there was, he thought, a wealth of wisdom. The dog, with remarkable sagacity, saw that in this apparently wild statement there was a subtle reference, and it was laughing at those who failed to appreciate it. It was, of course, perfectly apparent that the reference was to the moon being made of cheese—the milk of the cow and the cheese of the moon. Some authorities favoured the green cheese theory, but he was prepared to accept the more cautious estimate, pending confirmation by the man in the moon. If further proof were needed he would refer merely to the last word of the fourth line—craft—which gave the name to a Canadian cheese. As regards the last line, he had to confess himself at a loss, but he had formed the theory that it was a clumsy way of saying that both the dish and the spoon leaked. He was, however, pursuing that point.

The idealist would then rise and would say that whilst he had listened with a great deal of respect and admiration to the last speaker he felt compelled to disagree, *in toto*, with the views he had expressed. He felt sure that the speaker had entirely misunderstood the whole theme of this wonderful poem and had missed the inspiration of the grand old poet. He could not think that the poem had a purely material explanation—indeed, were he to be convinced that a material explanation were the only one possible, he would feel inclined to agree with the views of the first three speakers. He might accept the materialist's explanation of the first line, but beyond that—No! He felt sure that the poet was veiling the extreme agony of a sensitive soul in allegorical

verse. He was portraying the corrupt moral, social and spiritual conditions of his day, and his whole being revolted and was nauseated. He saw that the founts of art and spiritual regeneration were in the hands of a degraded bestiality: he saw the awful defiance of natural laws and he heard the coarse, senseless mocking mirth of a degenerate and brutish creation. The poet's soul must have been filled with a profound grief and he must have yearned for a regeneration. His mind must have reeled at the horror of the awful cataclysm. Would that the poet had finished his glorious work with a fierce denunciation of the gross wickedness he saw around him, and had pictured the fearful wrath of an avenging deity. Alas, it was evident that the wise venerable old poet had died too soon—broken in heart and spirit.

PERCY FLAGE.

Holborn.

Loud shrieks of delight, and cries of "It 'im!" "Give 'im one," etc., proceeding from the King's Cross Wesleyan Church Hall on the afternoon of Feb. 20, no doubt led many passers-by to believe that a boxing-match was taking place. The true cause of the excitement, however, was "Aladdin"—a pantomime which members of the Holborn staff presented as the entertainment at their annual children's tea. An account of the performance was printed in a previous issue of the *Journal*, so further details are unnecessary, but it did one good to see the breathless interest with which the youngsters followed Aladdin through his adventures. Their excitement knew no bounds when the Magician appeared on the scene, and the happy ending of the story was greeted with profound sighs of relief.



"ALADDIN."

Misses Butterfield, Hart, Calogredy, Blacker, Pollard, Lott, and Fensham.

The tea, as usual, was a picturesque sight. The hall was gaily decorated with paper hangings, streamers and balloons, and each small guest, on arrival, was presented with a coloured handkerchief, and gay paper hat. One young gentleman certainly did gather up all the handkerchiefs he could lay hands on as he walked down the length of the table—but that was only a minor incident.

The band, always ready to lend a hand in a good cause, was a valuable asset to the proceedings—how the children enjoyed singing (or murdering?) the popular songs of the day, while the onlookers were unable even to pass a remark to each other, the noise was so deafening.

At the end each child received an apple, an orange, and a bag of sweets in orthodox "treat" fashion, and to tell the truth, it is not a bad idea to be a "poor child" for once, so long as one receives an invitation to the Holborn Children's Tea.
O. M. L.

"Summer" Holidays.

The annual leave list has once again begun to thread its tedious way through the staff, descending from senior to junior with great precision, and bringing in its train the usual flutterings and conjectures.

In company with a few other "lesser lights," I never feel a single flutter over the holiday list—never raise a hope. Unlike many of the seniors, I never develop indigestion hoping against hope that June will not be filled before my turn comes. For me, June will be booked, also July and perhaps most of August, and so on. Last year, and for some years past, I have known when I would be taking my holidays, and this year I know I shall not be disappointed for *November. The reason for this fore-knowledge is not difficult to find. Being a humble W.A. I must take what the Clerical Officers scorn. But it saves a great deal of trouble and fret. It doesn't matter to me how long the list takes to get round the staff. I experience no such thing as suspense. It is useless for me to hunt it out periodically to see how June and July are getting on and then make myself a general nuisance by canvassing the rest of the girls to find out how many are likely to take those months. No one ever comes to me and tries to wheedle my fortnight from me. No one ever comes and says, "You nice, kind girl you! I want that fortnight. No doubt you will be delighted to change in my favour." It saves me the delightful task of persuading the lady that I really do want that particular part of the year.

Now look at what the leave list means to the Clerical Officers who are midway down the list. For days most of them are in a state of suppressed excitement over it. Then when they get it they are in a fever for nearly half a day wondering whether to take the only fortnight left in June or have a holiday in July. Whichever they put down for, they regret it as soon as the list is beyond recall and wish they had taken what they had not. Then others are decided upon what they require only to discover that someone else has taken a fancy to that too. So it would seem that the only ones who are happy (?) are those who are at extreme ends of the list—those who have the run of the whole summer and those who take what is left.

Of course, there is no real need for me always to take *November for my leave. I can always ask a senior who has a holiday in July to change!

E. A.

* Editorial hyperbole!

Sydenham.

The last dance of the winter season was held on Feb. 23 at Dartmouth Hall, Forest Hill, Mr. Kirwin was M.C., and in spite of the fact that the dance was held during the season of Lent, it was well supported. All those present had a very enjoyable evening, and the Committee are again able to assist the Tennis and Swimming Clubs financially with the proceeds.

The Committee hope to organise several flannel dances during the summer, and will be pleased to welcome their many friends from other exchanges.
G. M. T.

Photographic Competition Result.

The names are given below of the prizewinners in the recent Photographic Competition. Books have been sent to the competitors in question: Miss E. J. Turner, Mayfair; Miss I. M. Pitman, Gerrard; Miss Hibbart, Addiscombe.

Lest We Forget.

Once upon a time there was a Great War. It is seven and a half years now since it ended, and some people seem to have forgotten it, but among those who cannot forget if they would are 7,000 ex-service men who are still in hospital in the London area. There are 600 of them, incurable, at Queen Mary's Hospital, Sidcup, all of whom have lost health and the ability to lead a normal life by reason of their war service. Most are not strong enough to do very much; some are in bed; and they are dependent on themselves and each other for most of their amusements.

A wireless installation, bringing music and talks, and entertainments to their bedsides would be a great blessing, but they have not one. The Gerrard Staff discovered this on a recent visit. They have been giving treats to the patients at this hospital for the past eight years and have subscribed for this purpose over £600, and they have now set to work to collect sufficient money to provide a suitable installation.

It is too big a thing for one exchange to manage alone, but there must be plenty of people elsewhere who, if they knew the need, would welcome the opportunity to help with such a good work. Some folk have just got a new scale of pay, some have had a promotion, all have a little bit on the bonus. Will not some of these remember and send a share of the "bit extra" to Miss James or Miss Roe at Gerrard for the Wireless Fund?
W. M. E.

Contributions to this column should be addressed: THE EDITRESS, "Talk of Many Things," *Telegraph and Telephone Journal*, Secretary's Office, G.P.O. (North), London, E.C.

DEVELOPMENT STUDIES.

BY W. E. GAUNTLETT, GLASGOW.

THIS is a subject which has no doubt always caused more or less concern to all Telephone men. An intelligent and reasonably accurate Development Study is one of the most essential features of the Telephone business. It is more or less the foundation of the whole structure. Its preparation is an important function, and there should be nothing haphazard about it.

It is one of the duties of the Contract Manager and his staff to prepare these Studies, and no doubt these officers do their work conscientiously and to the best of their ability. To make a reliable study involves much research work and enquiry, and requires considerable telephone experience. Past growth figures are more or less available, but without a knowledge of the local conditions, etc., then ruling, are not of much value, and in fact may be misleading. This is particularly so for the past 10 years.

The future is even more difficult to determine, and also requires very close examination and enquiry. There is the normal growth of the population and its quality; the development of existing industries, and the introduction of new; the prospect of building on virgin ground, and that arising out of street improvements, clearance of slums, etc. All this requires considerable enquiry and intelligent anticipation if we are to get anything like a reliable forecast.

Then again rates play an important part. We should have some imagination as to what the future is likely to yield, but that imagination must be reasonable. Some people's imagination goes to the extent of providing telephones in every house on the same lines as water and gas. This is perhaps almost too Utopian but we must reasonably assume that rates will be reduced and other advantages introduced within the next 20 to 25 years.

It is hard to foresee what the social and other conditions will be in 20 years' time, but if we imagine, say an installation charge of £1 per quarter or 7s. 6d. per month up to, say a 2 mile radius, and a call fee of 1d., with reduced trunk charges, and an extension of the unit call area up to say 10 miles, it requires still some imagination to forecast what that effect would be on telephone development, but there is no doubt it would be enormous.

We have a long way to go to reach the American standard, but American figures may be somewhat misleading when compared with direct lines. There is a great disparity between the number of direct lines per 100 population and the number of stations. There are, I believe, few, if any, exchanges in this country where we have an average of as many as two or more telephones per direct line, while America has, in some cases, as many as 6 or 7. There is, therefore, much room for increasing our stations, and stations should lead to increased direct lines. Stations encourage the telephone habit and that is what we have to cultivate in this country.

All these points have a bearing on development studies, and point to the necessity of the work being in the hands of specialised staff.

We have an organised traffic Department who study and decide the lay out for a new or renewed exchange, but if the ground work or foundation on which they work is wrong then the whole structure suffers. Of course, we shall never obtain absolute accuracy of forecast, there are too many unknown qualities, hence the necessity for getting as near as humanly possible. We must be neither too optimistic nor too pessimistic, one is almost as bad as the other. To under-estimate future requirements may lead to premature scrapping of plant and buildings, while to over-estimate means wasted and idle capital. At the same time, in cases of doubt, it is better to err on the side of over- rather than of under-estimating—there should always be the margin for safety.

There was a very pregnant phrase in the literature recently issued by the Telephone Development Association. They said "We believe the P.O. would be the first to admit that there were places where they could not put in canvassers because they could not supply the service, etc."

Of course, there may be exceptional reasons and circumstances accounting for this, but such a condition should not be possible in a few years if adequate development studies are prepared and legislated for.

With the introduction of Automatic Exchange working the need for accurate studies becomes even more pronounced on account of the more expensive plant involved.

Development is the life blood of the Telephone Service, and we must be prepared by anticipation to meet all the requirements of the public in supplying the facilities they require and those without delay.

Development studies cannot be rushed, and therefore we should always be well in advance of requirements. Circumstances will, of course, vary, but where it is clear that any further extension of plant will involve the question of premises, five years ahead is none too soon to prepare your study.

After a study has been approved it must not be considered finished with. The actual growth should be followed and compared with the estimate.

A graph of sufficient size as to be easily readable should be plotted, and on this the actual growth from time to time superposed.

This graph should be kept by the Contract Department, and act as a spur to keep up at least to the estimate, but where it is seen the estimate is being consistently overrun, the attention of the officer in charge of development should be drawn thereto, and if necessary, the whole scheme should be thoroughly reviewed and the reasons for the excess ascertained, and a decision arrived at as to what further action is desirable.

We should by this means also get readily accessible data of progress.

Much more could be written on this subject which is a fascinating one, but enough has been said no doubt to emphasise the importance of the subject.

GOLF MATCH.

A.G.D. v. SECRETARY'S OFFICE.
At Banstead Downs, March 24, 1926.

A.G.D.	SINGLES.	Secretary's Office.	
G. E. Pitcairn	0	R. W. Roadknight (5 & 4) ...	1
C. Cross	0	De G. Gavey (2 up)	1
L. H. Mitchell	0	D. MacGregor (4 & 2)	1
S. W. Briggs	0	C. W. Whitehurst (3 & 2) ...	1
A. C. Smith	0	W. E. Weston (5 & 3)	1
H. E. Eckford (4 & 3) ...	1	W. R. Birchall	0
W. L. Gartland	0	T. A. Prout (3 & 1)	1
A. J. Ratcliff	0	J. G. Drennan (4 & 2)	1
H. Dunn (2 up)	1	A. Gordon	0
J. Hardie	0	F. C. G. Twinn (1 up)	1
R. R. Henty (all square) ...	½	H. E. Gallaher	½
P. S. Pert (2 up)	1	H. S. Pearce	0
	3½		8½
	FOURSOAMES.		
Pitcairn and Cross	0	Gavey and Roadknight (1 up) ...	1
Smith and Briggs (6 & 5) ...	1	MacGregor and Whitehurst	0
Mitchell and Eckford	0	Weston and Birchall (2 & 1) ...	1
Gartland and Ratcliff (2 & 1) ...	1	Prout and Drennan	0
Dunn and Hardie	0	Gordon and Twinn (6 & 5)	1
Henty and Pert (all square) ...	½	Gallaher and Pearce	½
Grand Totals	6		12

LONDON TELEPHONE SERVICE NOTES.

Sport.

An important meeting, arranged by the Civil Service Sports Council, was held at Cornwall House on Friday, March 12, the Controller being in the chair.

The speakers from the Council, Miss Constantine and Mr. Curtis-Bennett, were introduced by Mr. Valentine, who said that he would assist the sports movement in any way that he could. Mr. Curtis-Bennett made his cause, and incidentally himself, very popular in a breezy speech, whilst Miss Constantine made an eloquent appeal to the sporting instincts of the women in the service. Further speeches were made by Miss Liddiard, Mr. Horace Dive and Capt. J. Webb.

It transpired that there was already in existence in the L.T.S. a provisional committee concerned with the formation of a sports association, and a resolution was passed in favour of early action being taken to put sport in the L.T.S. on a fitting basis.

It is understood that the committee will shortly hold a conference representing all branches of sport with a view to co-ordination. There can be no doubt that a movement of this kind deserves the support of the whole staff.

* * * *

London Telephonists' Society.

The London Telephonists' Society held its final meeting of the current session in the Drawing Room of the London Central Y.M.C.A., Tottenham Court Road, on Friday, March 5.

The evening commenced with a short musical programme arranged by the staff of Langham Exchange, the items of which were all well rendered and well received.

There was also a goodly display of the sets of photographs which had been submitted in connexion with the "Happy Holidays" photograph competition. These reminiscences of happy holidays were much enjoyed by all, but particularly by Mr. F. R. Hooper and Miss E. L. Holkham (Gerrard), who had been awarded the first and second prizes respectively.

The following prizewinners then read their papers:—"Ups and Downs in the Directory Enquiry," Miss E. M. Stevens (Paddington); "Incidents in the Training of a Substituting Officer," Miss W. E. Kohler (Paddington); "The Telephone Service as a Career," Miss E. Cave (Mill Hill); "Supervisors," Miss C. D. Davidson (Central); after which the Controller—whom all were glad to see present—congratulated the prize-winners on their interesting papers, and, in referring to the photographs mentioned the extreme pleasure which the collection of photographs always afforded him. He then presented the prizes to the fortunate competitors.

The meeting closed by Mr. White, the President, thanking all those who had assisted in making his year of office so successful, and by Mr. Pink proposing a hearty vote of thanks to the Controller for his kindness in distributing the prizes, which received an enthusiastic response.

At the Committee meeting, which preceded the General meeting, the Society's Secretary, who had recently been married, was presented with a cheque subscribed by the members of the Committee as a wedding present. Mr. Dive, in making the presentation, very kindly expressed the congratulations and good wishes of the Committee for his future happiness. In thanking Mr. Dive and the other members of the Committee, Mr. Thirkell said he would spend the money on a specific article for the further adornment of his home which should be permanently associated with the kindness he had always received from the members of the Society.

* * * *

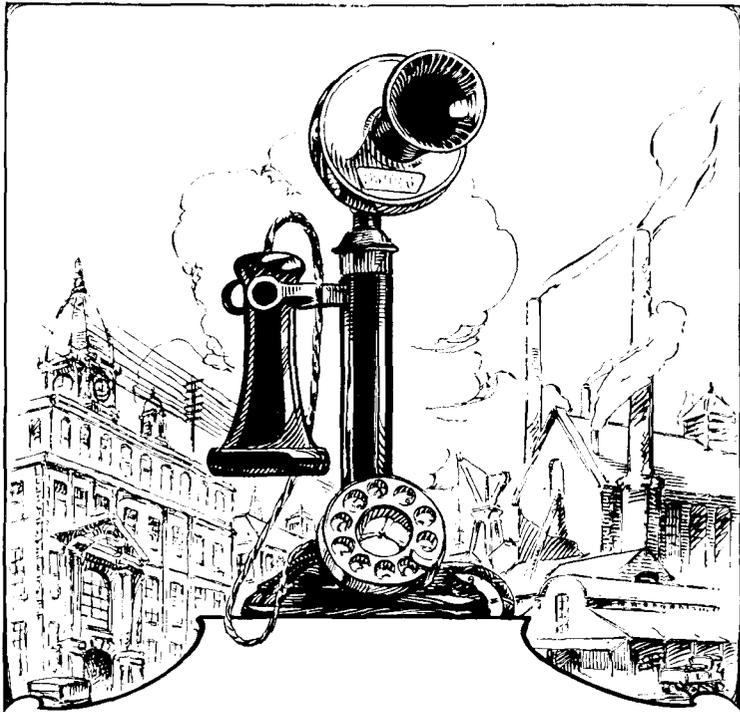
Culled from the Exchanges.

Corporate Effort.—The Central, City, Toll and Trunk Exchanges combined as usual in giving the annual tea party to 300 of the poorest children of Canning Town on Jan. 30. A party of helpers left Carter Lane at 2 p.m. and by 3.30 the tables were all ready, looking so fairy-like that it was hard to realise that human agency had been at work.

How we wished we were young again as we watched the little ones filled with delight—and cake.

After tea there was a marionette show which amused the children immensely—the grown-ups too.

Then there were two large Xmas trees, very kindly given for the occasion by the Bolingbroke Hospital, Wandsworth. They were laden with dolls and toys, and each little girl received a daintily dressed dollie from Father



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Christmas, whilst each little boy was given a mechanical toy. The hosts were sorry indeed when their small guests had to go, but they were sped on their way, each with a bag of sweets and biscuits and a comic paper.

Thanks are due to all who helped to make the occasion so successful, and there will be another tea party next year—of course!

Central.—The final whist drive of the season was held at Slaters Restaurant, Cheapside, on Feb. 18. Mr. Moore, of the Engineers, who usually acts as M.C., was prevented from attending, and a regular frequenter from outside the L.T.S. in the person of Mr. Webster filled the post in excellent fashion. Many thanks to him.

Mr. R. T. Gregory, who rarely misses an attendance and who had not previously won a prize, succeeded this time. Incidentally he brought a party of eight and they did the thing very thoroughly by carrying off eight prizes.

The Eldorado Swimming Club (Central) have held three social evenings during the winter season. All were successful, both socially and financially. Very good fun was enjoyed in the way of games, competitions, music and dancing. Interest was added by the award of small prizes.

The last gathering will be on March 30, just before the commencement of the summer season, which will be embarked upon with renewed energy and enthusiasm.

Gerrard.—Saturday, March 6, opened wet and wild, but towards midday anxious observers noticed that the Clerk of the Weather appeared to be making a special effort, and, sure enough, by the early afternoon he had turned on the desirable fine day with which he has always favoured the visit of the Gerrard Staff to Queen Mary's Hospital at Sidcup.

The facial cases for the treatment of which this hospital has long been noted have now been reduced to very few, and these have been transferred to Roehampton for the final stages of recovery, and the hospital is now filled with patients who are incurable, many of whom must spend the rest of their lives in and out of hospital. There are nearly 600 men in the hospital now, and their various disabilities render it impossible for most of them to take part in any strenuous sport, and though everything is done that can be done by Governments to alleviate their lot—they have the finest medical and surgical treatment, workshops for hobbies, and organised recreation—they must often feel very wearied with their detachment from the everyday life of the world. Treats such as arranged by Gerrard are therefore specially welcome.

The visitors, about 50 in number and including many past Gerrardites, arrived early, but found the Caterer and his staff already hard at work, willing helpers were soon busy piling good things on the ward trolleys and the long table in the dining hall, and at 4 p.m. there was a procession of trolleys to the various wards where patients were in bed or not fit to attend the dining hall tea. A friendly Sister welcomed the visitors at the ward doors and gave where necessary in "diet" cases a kindly censorship of the dainties provided, but there were happily very few who were not allowed something.

Meantime in the hall the laden tables had disappeared in a sea of hospital blue, and before long the good things provided had disappeared too, while the helpers were busy with the teapots.

After tea a short concert was given in two wards where the patients were unable to come to the evening's entertainment, and at 6 p.m. a jazz band commenced business in the Recreation Hut, where a large audience had already assembled. The band, and vocal concert provided by the Gerrard staff, and marionettes, kept up a continuous entertainment till 9 p.m. A packet of cigarettes had been given to each man at tea-time, and more were handed round during the concert, and as there seemed to be no non-smokers, the hall was presently suggestive of a mild gas attack, but nobody minded, and when ices and cakes went round nobody complained of a smoky flavour.

Everything went with a swing, and if the patients enjoyed the event half as much as the visitors they had a very happy time.

The Gerrard Staff were particularly pleased that Miss Cox, the Superintendent of the Female Exchange Staff, was able to be with them this time. Miss Cox's sympathy and interest in any of the staff's activities can always be counted upon, but it is not always that the many calls on her time permit her to take a personal share in them. It was observed that, like many another on previous occasions, invited to "come and see," she remained to help.

The Gerrard Staff have been subscribing for and organising these entertainments for eight years and have already started to collect funds for the next. They discovered on this occasion that the hospital has no "wireless," and it was at once decided that this deficiency must be remedied as speedily as possible. So they are now going to set to work to collect enough to provide a suitable installation, and any help and interest from other exchanges will be gladly welcomed by Miss James or Miss Roe at Gerrard. The writer—a non-Gerrardite—suggests that those who have not spent their March bonus should please note.

London Wall.—A tea and entertainment was given on Feb. 6 at the Islington Medical Mission, to 220 poor children of Islington by the Engineering and Traffic Staff of the London Wall Exchange.

A sumptuous tea was provided which the children did full justice to, and much fun was caused by the crackers provided and the fitting on of hats and caps. After tea was cleared away a very creditable performance of "Puss in Boots" was given by members of the Clerical Staff—this was enjoyed as much by the helpers as by the children, and it is hoped that another performance may be given soon.

On leaving the hall each girl was presented with a dressed doll, and each boy with a book, besides an orange, bag of sweets, cake, and two new half-pennies. A goodly quantity of fruit, flowers, and toys were left for distribution to sick children in the district. The Committee are now anxious to raise a sum of money to send some of these poor little children for a country holiday, and are working to that end.

Clissold.—As a result of subscribing a sum of £200 to the Royal National Orthopaedic Hospital, the staff have been allowed the privilege of naming a cot in the children's ward.

The amount was raised at a bazaar held on Nov. 28 last.

The cot will be known as "Clissold, London Telephone Service."

Tottenham.—A successful social was held on Feb. 16.

Mr. Collins, as M.C., being instrumental in making all the items go with a swing. The Tottenham Staff were very happy to welcome many L.T.S. friends.

It has been suggested that another social be held shortly which will, perhaps, lead to the discovery of still more excellent talent.

PERSONALIA.

LONDON TELEPHONE SERVICE.

Resignations on account of marriage:—

- Miss E. DAVIS, Telephonist, of Finchley Exchange.
- Miss H. CAMERON, Telephonist, of London Wall Exchange.
- Miss G. E. DYSON, Telephonist, of Mountview Exchange.
- Miss A. WILTSHIRE, Telephonist, of Paddington Exchange.
- Miss M. K. FARRELL, Telephonist, of Paddington Exchange.
- Miss H. E. SPARKES, Telephonist, of Victoria Exchange.
- Miss G. B. H. EDWARDS, Telephonist, of Woolwich Exchange.
- Miss H. M. D. BAXTER, Telephonist, of the Trunk Exchange.
- Miss K. M. WELFORD, Telephonist, of the Trunk Exchange.
- Miss C. M. PULLEN, Telephonist, of the Holborn Exchange.
- Miss E. K. MABBUTT, Telephonist, of the London Wall Exchange.
- Miss L. M. WHITE, Telephonist, of the East Exchange.
- Miss B. M. TREBLE, Telephonist, of the East Exchange.
- Miss F. L. LEWIS, Telephonist, of the Central Exchange.
- Miss L. R. VAUGHAN, Telephonist, of the Central Exchange.
- Miss M. BREMER, Telephonist, of the Gerrard Exchange.
- Miss F. A. COOLE, Telephonist, of the Gerrard Exchange.
- Miss E. A. HEWITT, Telephonist, of the Paddington Exchange.
- Miss K. E. KIRLEY, Telephonist, of the Mountview Exchange.

OBITUARY.

MISS A. H. RAWLINGS.

A GLOOM was cast over City Exchange by the death of Miss Rawlings in University College Hospital after a short but distressing illness. She was an officer who applied herself zealously to her official duties and had an attractive personality. She was an enthusiastic worker for the social welfare of the staff, and her activities brought her into touch with numerous people throughout the service. They join with City in mourning her loss.